Clinical Skills for OSCEs

Second Edition

Neel L Burton • Kuldip Birdi
Editors

Foreword by Lord McColl of Dulwich

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Life is short, the art long, opportunity fleeting, experiment treacherous, judgement difficult.

Hippocrates (c. 460–370 BC). Aphorisms, Aph. 1.

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Foreword

Ecclesiastes' comment that "*Of making many books there is no end and much study is a weariness of the flesh*" is as true as ever, but this book is so brilliant and useful that it is well worth all the hard work which went into its production. This second edition is a tribute to the success of its predecessor. It is easy to read and understand and informs in an unforgettable way. The senior author was wise and humble enough to recruit a student to help with this new edition, thus preserving the essential character of this down to earth practical guide very much in touch with problems as seen by students.

The old examinations were notoriously subjective but not without their humour. When patients with vesico-colic fistulae pass flatus during micturation it makes a curious whistling noise. An examiner in the old days asked a candidate what he would think if the patient told him that he whistled when he micturated.

The candidate replied "I would be thinking that he was a very happy man!"

OSCEs involve a much more objective and fairer system allowing the candidates to show a greater variety of skills to many more examiners and with a much greater emphasis on kindly and sensible communication. At the end of the day clinical skills in history taking and physical examining will always be highly relevant in practising first class medicine. This splendid book will help to continue this all important theme.

Professor The Lord McColl of Dulwich CBE
Shadow Minister for Health
Professor of Surgery
Chairman of Mercyships UK
President of The Leprosy Mission

Foreword

I imagine that I was asked to write this foreword because I used to be the dean of a medical school, and during my time was responsible for the introduction of two new curricula and for introducing OSCEs into the final examination. Typical, I imagine you are thinking, the trouble with teachers in medical schools in general, and deans in particular, is that they seem to have forgotten that they were once students and spend their time dreaming up more and more fiendish schemes to make life difficult for the current generation of medical students. If I suggest that it used to be worse, I don't suppose that you will be inclined to believe that this is possible. However, Thomas Huxley in 1877 (which was indeed before my time) wrote "the burden we place on the medical student is far too heavy. A system of medical education that is actually calculated to obstruct the acquisition of sound knowledge and to heavily favour the crammer and the grinder is a disgrace." Certainly when I was a medical student, and as I have continued as a student of medicine, I have always thought that Dr Huxley got it about right. Accordingly attempts have been made, and continue, to reduce the amount of factual knowledge that is required to qualify as a doctor, and to encourage acquisition of deep learning, understanding, and competence. Competence to make a diagnosis, to carry out technical procedures, and to communicate with patients. The latter point is particularly important[1]. Surveys of what matters to patients always emphasise the importance of technical competence and communication skills.

So why have OSCEs? I think it is possible to have too many exams during the course of a medical school education, and it really ought not to be the case that if it's not examined, it's not worth learning. There must be, in every medical school curriculum, the opportunity to get involved in science or humanities outside the requirements of passing a final exam. Nonetheless, it is very important, not least to patients, to know that every doctor who qualifies is competent at doctoring, and the OSCE is designed to test that. This excellent book on clinical skills for OSCEs is concise, informative, and comprehensive. I have no doubt whatsoever that anyone who has mastered its content will sail through the final OSCE and indeed enjoy the experience. They will probably enjoy it far more than the examiner. Most exams are more fun for the examiner than for the candidate but not OSCEs! Much more importantly, the successful candidate will be competent to take up their work as a doctor and perhaps be rather more relaxed and more comfortable than I was 43 years ago on my first day on the wards.

Professor Sir Cyril Chantler
Chairman, The Hospital for Sick Children
Great Ormond Street and
the King's Fund, London

1. Di Blasi Z, Harkness E, Ernst E, Georiou A, Kleijeni J. Lancet 2001, 357: 757–762.

Preface to the First Edition

Clinical skills exams, such as Objective Structured Clinical Examinations (OSCEs), are a daunting but essential component of medical undergraduate education.

To prepare for these exams, our generation of medical students had to pull together vast amounts of information from maladapted resources. This tedious and time-consuming process can now be avoided, as all this information has been compiled into this one, handy book.

Indeed, this book covers all the clinical skills that are likely to be tested during the clinical years of a medical course. Although it aims to be comprehensive and detailed, its primary purpose is to be easy to read and to the point. *Clinical Skills for OSCEs* does not attempt to teach its reader medicine or surgery, but rather gathers and organises a large amount of information and presents it in a structured and memorable fashion.

We hope you find *Clinical Skills for OSCEs* useful both for your revision and for the consolidation of skills learnt at the patient's bedside.

Neel L Burton
Akbar H de' Medici
Nicholas C Stacey

London, August 2002



Preface to the Second Edition

This second edition of *Clinical Skills for OSCEs* (CSFO) has been prompted both by the success of the first edition, which is currently being translated into Japanese, and by the many suggestions for improvement received both from medical students and junior doctors who unexpectedly found use for the book as a bedside *vade mecum* over the past three years.

During these three years I reluctantly but incontrovertibly transformed from being a medical student to being a junior doctor, and at such a distance no longer feel best qualified to teach on medical school OSCEs. For this reason, I asked an eager, bright-eyed and bushy-tailed final year medical student, Kuldip Birdi, to join me in the preparation of this second edition.

Thanks to Kuldip, all the best features of the first edition have been retained: student authored, exam focused, and up to date. Although considerable background information has been added to many of the stations, the text retains the pithiness and clarity that has made it easy to learn and memorise, or quickly refer back to in the heat of a busy on-call. Learning and memorisation have also been supported by a significant increase in the number of diagrams, and greater use of tables and charts. Last but not least, over 20 previously unseen stations, including stations on arterial blood gas sampling and interpretation, blood transfusion, and abdominal X-ray interpretation, have been added to the original 90 stations, confirming CSFO as one of the most comprehensive clinical skills handbooks available to medical students and junior doctors.

Neel L Burton
Kuldip Birdi
Oxford and London, January 2006

Post-scriptum: Comments about this book and suggestions for improving it can be made to neel.burton@psych.ox.ac.uk.

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This book could not have been produced without the commitment and dedication of the commissioning and editorial teams at Informa Healthcare. The editors are especially indebted to Catriona Dixon, whose remarkable efficiency and flexibility rivalled only theirs, and led to the book being produced in record time.

OSCE tips

- **Don't panic.** Be philosophical about your exams. Put them into perspective. And remember that as long as you do your bit, you are statistically very unlikely to fail. Book a holiday to a sunny Greek island starting on the day after your exams to help focus your attention.
- **Read the instructions carefully and stick to them.** Sometimes it's just possible to have revised so much that you no longer "see" the instructions and just fire out the bullet points like an automatic gun. If you forget the instructions and/or the actor looks at you like Caliban in the mirror, ask to read the instructions again.
- **Quickly survey the cubicle for the equipment and materials provided.** You can be sure that items such as hand disinfectant, a tendon hammer, a sharps bin, or a box of tissues are not just random objects that the examiner later plans to take home.
- **First impressions count.** You never get a second chance to make a good first impression. As much of your future career depends on it, make sure that you get off to an early start. And who knows? You might even fool yourself.
- **Don't let the examiners put you off or hold you back.** If they are being difficult, that's their problem, not yours. Or at least, it's everyone's problem, not yours. And remember that all that is gold does not glitter; a difficult examiner may be a hidden gem.
- **Be genuine.** This is easier said than done, but then even actors are people. By convincing yourself that the OSCE stations are real situations, you are much more likely to score highly with the actors, if only by "remembering" to treat them like real patients. This may hand you a merit over a pass and, in borderline situations, a pass over a fail. Although they never seem to think so, students usually fail OSCEs through poor communications skills and lack of empathy, not through lack of studying and poor memory.
- **Enjoy yourself.** After all, you did choose to be there, and you probably chose wisely. If you do badly in one station, try to put it behind you. It's not for nothing that psychiatrists refer to "repression" as a "defence mechanism", and a selectively bad memory will put you in good stead for later life.
- **Keep to time but do not appear rushed.** If you don't finish by the first bell, simply tell the examiner what else needs to be said or done, or tell him indirectly by telling the patient, e.g. "Can we make another appointment to give us more time to go through your treatment options?" Then summarise and conclude. Students often think that tight protocols impress examiners, but looking slick and natural and handing over some control to the patient is often far more impressive. And probably easier.
- **Be nice to the patient.** Have I already said this? Introduce yourself, shake hands, smile, even joke if it seems appropriate – it makes life easier for everyone, including yourself. Remember to explain everything to the patient as you go

along, to ask him about pain before you touch him, and to thank him on the second bell. The patient holds the key to the station, and he may hand it to you on a silver platter if you seem deserving enough. That having been said, if you reach the end of the station and feel that something is amiss, there's no harm in gently reminding him, e.g. "Is there anything else that you feel is important but that we haven't had time to talk about?" Nudge-nudge.

- **Take a step back to jump further**. Last minute cramming is not going to magically turn you into a good doctor, so spend the day before the exam relaxing and sharpening your mind. Go to the country, play some sports, rent out a DVD. And make sure that you are tired enough to fall asleep by a reasonable hour.
- **Finally, remember to practise, practise, and practise.** Look at the bright side of things: at least you're not going to be alone, and there are going to be plenty of opportunities for good conversations, good laughs, and good meals. You might even make lifelong friends in the process. And then go off to that Greek island.

General skills

Station 1
Blood pressure measurement

Before starting

Introduce yourself to the patient.

Explain the procedure and ask for his consent to carry it out.

Tell him that he might feel some discomfort as the cuff is inflated, and that the blood pressure measurement may have to be repeated.

! Avoid white coat hypertension by putting the patient at ease. Briefly discuss a non-threatening subject, such as the patient's journey to the clinic, or the weather.

The procedure

- Position the patient's right arm so that it is horizontal at the level of the mid-sternum.
- Place the vertical column so that it is at eye level.
- Locate the brachial artery at about 2 cm above the antecubital fossa.
- Select an appropriately sized cuff and apply it to the arm, ensuring that it fits securely.
- Inflate the cuff to 20–30 mmHg more than the estimated systolic blood pressure. You can estimate the systolic blood pressure by palpating the brachial or radial artery pulse and inflating the cuff until you can no longer feel it.
- Place the stethoscope over the brachial artery pulse, ensuring that it does not touch the cuff.
- Reduce the pressure in the cuff at a rate of 2–3 mmHg.
    - The first consistent Korotkov sounds indicate the systolic blood pressure.
    - The muffling and disappearance of the Korotkov sounds indicate the diastolic blood pressure.
- Record the blood pressure as the systolic reading over the diastolic reading. Do not attempt to "round off" your readings; to an examiner's ear, 143/88 usually rings more true than 140/90.
- If the blood pressure is higher than 140/90, indicate that you might take a second reading after giving the patient a one minute rest.

! If the patient has a history of postural hypotension, you must also record the standing blood pressure.

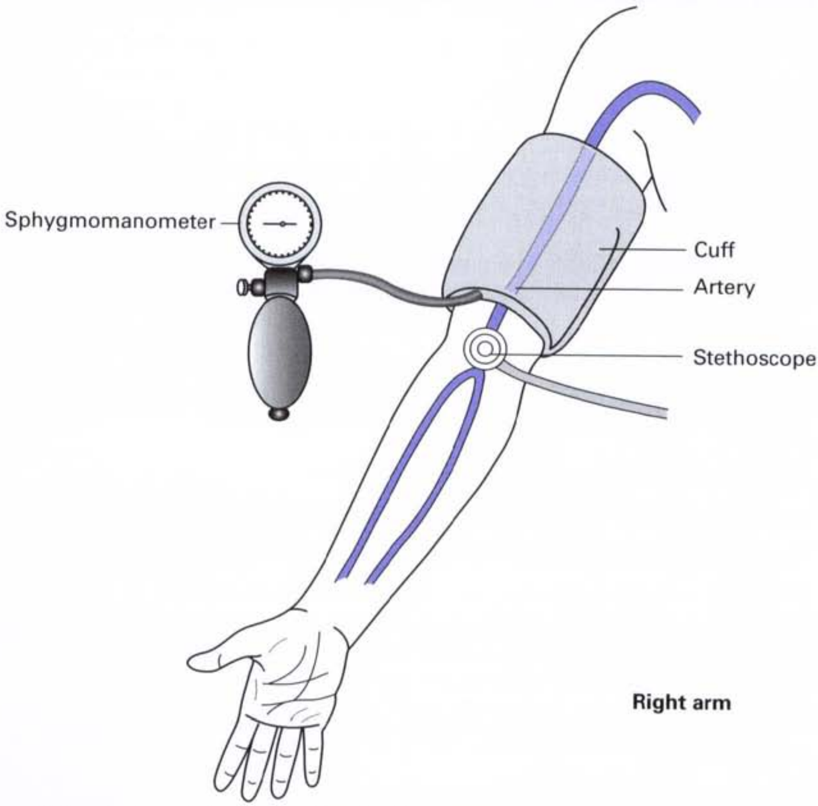


Figure 1. Positioning of the cuff and head of the stethoscope

After the procedure

Ensure that the patient is comfortable.

Tell the patient his blood pressure and explain its significance. Hypertension can only be confirmed through several blood pressure measurements taken over time.

Thank the patient.

Station 2
Hand washing

Hands must be washed before every episode of care that involves direct contact with a patient's skin, their food, invasive devices, or dressings, and after any activity or contact that potentially contaminates the hands.

The procedure

- Turn on the hot and cold taps with your elbows and wait till the water is warm.
- Thoroughly wet your hands.
- Apply liquid soap or disinfectant from the dispenser. Liquid soap is used in most hospital situations. Disinfectants include aqueous chlorhexidine ("Hibiscrub") or povidone iodine ("Betadine"). Alcohol hand rubs offer a practical alternative to soaps and disinfectants.
- Wash your hands using the Ayliffe hand washing technique:
  1. Palm to palm.
  2. Right palm over left dorsum and left palm over right dorsum.
  3. Palm to palm with fingers interlaced.
  4. Back of fingers to opposing palms with fingers interlocked.
  5. Rotational rubbing of right thumb clasped in left palm and left thumb clasped in right palm.
  6. Rotational rubbing, backwards and forwards, with clasped fingers of right hand in left palm and clasped fingers of left hand in right palm (see Figure 2).
- Rinse your hands thoroughly.
- Turn the taps off with your elbows.
- Dry your hands with a paper towel and discard it in the foot-operated bin, remembering to use the pedal rather than your clean hands!
- Consider applying an emollient.

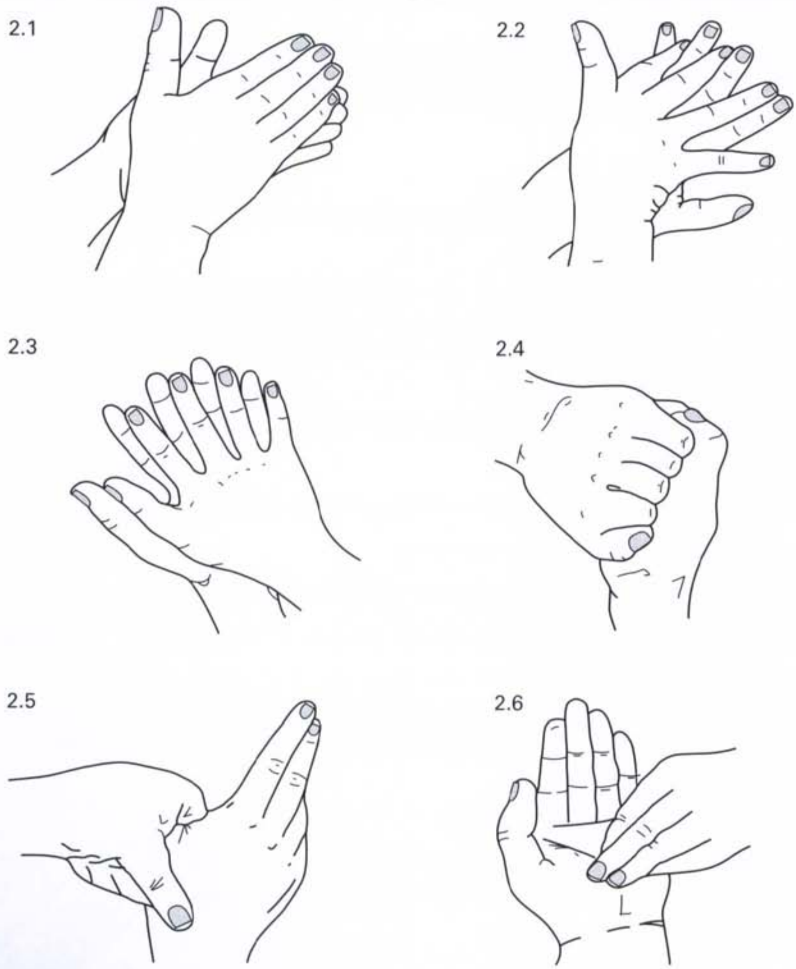


Figure 2. Ayliffe hand washing technique,

2.1 Palm to palm
2.2 Right palm over left dorsum and left palm over right dorsum
2.3 Palm to palm fingers interlaced
2.4 Backs of fingers to opposing palms with fingers interlocked
2.5 Rotational rubbing of right thumb clasped in left palm and vice versa
2.6 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa

Station 3
Venepuncture

Specifications: The station consists of an anatomical arm and all the equipment that might be required. Assume that the anatomical arm is a patient and take blood from it.

Before starting

Introduce yourself to the patient.

Explain the procedure and ask for his consent to carry it out.

Ask him which arm he prefers to have blood taken from.

Ensure that he is comfortable.

The equipment

In a tray, gather:

- A pair of non-sterile gloves.
- A tourniquet.
- Alcohol wipes.
- A 12G needle and needle-holder.
- The bottles appropriate for the tests that you are sending for (these vary from hospital to hospital, but generally yellow for biochemistry, purple for haematology, pink for group and save and crossmatch, blue for clotting, grey for glucose, and black for ESR).
- Cotton wool.

Make sure you have a sharps bin close at hand. The key to passing this station is to be seen to be safe.

The procedure

- Select a vein: the bigger and straighter the better.
- Apply the tourniquet, and re-check the vein.
- Put on gloves.
- Clean the venepuncture site using the alcohol wipes. Explain that the alcohol wipes may feel a little cold.
- Attach the needle to the needle holder.
- Tell the patient to expect a "sharp scratch".
- Retract the skin to stabilise the vein and insert the needle into the vein.
- Keeping the needle still, place a bottle on the needle-holder and let it fill.
- Once all the necessary bottles are filled, release the tourniquet.
- Remove the needle from the vein and apply pressure on the puncture site.

- Dispose of the needles in the sharps bin.
- Remove gloves.

After the procedure

Ensure that the patient is comfortable.

Thank the patient.

Label the bottles (at least: patient's name, date of birth, and hospital number; date and time of blood collection).

Fill in the form (at least: patient's name, date of birth, and hospital number; date of blood collection; tests required).

Examiner's questions

If the veins are not apparent

- Lower the arm over the bedside.
- Ask the patient to exercise his arm by repeatedly clenching his fist.
- Gently tap the venepuncture site with two fingers.
- Apply a warm compress to the venepuncture site.
- Do not cause undue pain to the patient by trying over and over again – call a more experienced colleague instead.
- Use femoral stab as a last resort.

In the event of a needlestick injury

- Encourage bleeding, wash with soap and running water.
- Immediately report the injury to the local Public Health Consultant.
- If there is a significant risk of HIV, post-exposure prophylaxis should be started as soon as possible.
- Fill out an incident form.

For more information on the management of needlestick injury, refer to local or national protocols.

Station 4
Cannulation and setting up a drip

The station is likely to require you either to cannulate an anatomical arm and to put up a drip, or simply to cannulate the anatomical arm. This chapter covers both scenarios.

Before starting

Introduce yourself to the patient.

Explain the procedure and ask for his consent to carry it out.

Gather equipment in a tray.

It is important to read the instructions for the station carefully. If, for example, the instructions specify that the patient is under general anaesthesia, you are probably not going to gain any marks for explaining the procedure.

Cannulation only

The equipment

In a tray, gather:

- A pair of non-sterile gloves.
- A tourniquet.
- Alcohol swabs.
- An IV cannula of appropriate size (Table 1). Size is primarily determined by the viscosity of the fluid to be infused and the required rate of infusion.
- A pre-filled 5 ml syringe containing saline flush.
- An adhesive plaster.
- A sharps box.

Table 1. IV cannulae

Colour	Size	Water flow (ml/min)*
Blue	22G	33
Pink	20G	54
Green	18G	80
White	17G	125
Grey	16G	180
Orange	14G	270

* Approximate values.

The procedure

- Find a suitable vein. Try to avoid the dorsum of the hand and the antecubital fossa.
- Apply the tourniquet to the arm and re-verify the vein.
- Put on the gloves.
- Clean the skin with an alcohol swab and let it dry.
- Remove the cannula from its packaging and remove its cap.
- Tell the patient to expect a "sharp scratch".
- Anchor the vein by stretching the skin and insert the cannula at an angle of about 30 degrees.
- Once a flashback is seen, advance the cannula and needle by about 2 mm.
- Pull back slightly on the needle and advance the cannula into the vein.
- Release the tourniquet.
- Press on the vein over the tip of the cannula, remove the needle completely, and cap the cannula.
- Immediately put the needle into the sharps box.
- Apply the adhesive plaster to fix the cannula.
- Flush the cannula.

After the procedure

Discard any rubbish.

Ensure that the patient is comfortable.

Thank the patient.

Cannulation and setting up a drip

The equipment

In a tray, gather:

- A pair of gloves.
- A tourniquet.
- Alcohol swabs.
- An IV cannula of appropriate size.
- An adhesive plaster.
- A sharps box.
- An appropriate fluid bag.
- A giving set.

The procedure

- Check the fluid prescription chart (if appropriate).
- Check the fluid in the bag and its expiry date.
- Remove the fluid bag from its packaging and hang it up on a drip stand.

- Remove the giving set from its packaging.
- Remove the protective covering from the exit port at the bottom end of the fluid bag.
- Remove the plastic cover from the large, pointed end of the giving set.
- Drive the large, pointed end of the giving set into the exit port at the bottom end of the fluid bag.
- Remove the protective cap from the other end of the giving set.
- Close the roller in the middle of the giving set's tubing.
- Squeeze and release the collecting chamber of the giving set until it is about half full.
- Open the roller and run fluid through the giving set to expel any air/bubbles.
- Close the roller.
- Find a suitable vein. Try to avoid the dorsum of the hand and the antecubital fossa.
- Apply the tourniquet to the arm and re-verify the vein.
- Put on the gloves.
- Clean the skin and let it dry.
- Remove the cannula from its packaging and remove its cap.
- Tell the patient to expect a "sharp scratch".
- Anchor the vein by stretching the skin and insert the cannula at an angle of about 30 degrees.
- Once a flashback is seen, advance the cannula and needle by about 2 mm.
- Pull back slightly on the needle and advance the cannula into the vein.
- Release the tourniquet.
- Press on the vein over the tip of the cannula and remove the needle. Do not cap the cannula.
- Immediately put the needle into the sharps box.
- Attach the giving set.
- Apply the adhesive plaster to fix the cannula.
- Adjust the drip-rate (1 drop per second is equivalent to about 1 litre per 6 hours).

After the procedure

Ensure that the patient is comfortable.

Thank the patient.

Discard any rubbish.

Sign the fluid chart (if appropriate).

Prescribing intravenous simple fluids (suggested approach for an OSCE station)

1. Inspect the patient for signs of dehydration (e.g. look at the tongue).
2. Assess the patient's pulse, blood pressure, and JVP.
3. Check the patient's urine output.
4. Check the patient's U&Es.
5. Devise a fluid regimen according to your findings and to the overall clinical situation.
6. Monitor the patient's pulse, BP, JVP, urine output, and U&Es as appropriate for the clinical situation.

Be particularly cautious in the elderly and in those with cardiac or renal failure, and never lose sight of the fact that fluid and electrolyte imbalances can be fatal.

A commonly prescribed 24-hourly fluid regimen for a healthy adult is:

Normal 0.9% saline	1 l		over 8 hours
Normal 0.9% saline	1 l		over 8 hours
5% dextrose	1 l	+ 20 mmol KCl	over 8 hours

The full complexities of fluid prescription (including colloids and blood products) are beyond the scope of this book: please refer to a textbook of medicine.

Station 5
Blood transfusion

Specifications: This station requires you either to cannulate an anatomical arm and set up a blood transfusion, or simply to set up a blood transfusion. You may be instructed to talk through parts of the procedure.

Before starting

Introduce yourself to the patient.

Explain the requirement for a blood transfusion and ensure that he is consenting.

Ensure that baseline observations have been recorded (pulse rate, blood pressure, and temperature).

Cannulation

See Station 4.

Blood transfusion

1. Sample collection

- Confirm the patient's name and date of birth and check his identity bracelet.
- Extract 10 ml of blood into a pink tube.
- Immediately label the tube and request form with the patient's identifying data: name, date of birth, and hospital number.
- Fill out a blood transfusion form, specifying the total number of units required.
- Ensure that the tube reaches the laboratory promptly.

2. Blood transfusion prescription

- Prescribe the number of units of blood required in the intravenous infusion section of the patient's prescription chart. Each unit of blood should be prescribed separately and be administered over a period of 4 hours.
- If the patient is elderly or has a history of heart failure, consider prescribing 20 mg of oral frusemide with the second and fourth units of blood.
- Arrange for the blood bag to be delivered. The blood transfusion must commence within 30 minutes of the blood leaving the blood refrigerator.

3. Checking procedures

Ask a registered nurse or another doctor to go through the following checking procedures with you:

A. Positively identify the patient by asking him for his name, date of birth, and address.

B. Confirm the patient's identifying data and ensure that they match those on his identity bracelet, case notes, prescription chart, and blood compatibility report.

C. Record the blood group and serial number on the unit of blood and make sure that they match the blood group and serial number on the blood compatibility report and the blood compatibility label attached to the blood unit.

D. Check the expiry date on the unit of blood.

E. Inspect the blood bag for leaks or blood clots or discoloration.

4. Blood administration

- Attach one end of the transfusion giving set to the blood bag and run it through to ensure that any air in the tubing has been expelled.
- Attach the other end of the giving set to the IV cannula.
- Adjust the drip rate so that the unit of blood is administered over 4 hours (1 drop per second is equivalent to about 1 litre per 6 hours).
- Sign the prescription chart and the blood compatibility report recording the date and time the transfusion was commenced. The prescription chart and blood compatibility report should also be signed by your checking colleague.

5. Patient monitoring

- Record the patient's pulse rate, blood pressure, and temperature at 0, 15, and 30 minutes, and then hourly thereafter.
- Ensure that the nursing staff observe the patient for signs of adverse transfusion reactions such as fever, tachycardia, hypotension, urticaria, nausea, chest pain, and shortness of breath.

Table 2. Some complications of blood transfusion

Immune	—Acute haemolytic reaction, (usually due to ABO incompatibility) —Delayed haemolytic reaction, (usually due to Rhesus, Kell, Duffy, etc., incompatibility) —Non-haemolytic reactions such as febrile reactions, urticarial reactions, and anaphylaxis
Infectious	Hepatitis HIV/AIDS Other viral agents Bacteria Parasites
Cardiovascular	Left ventricular failure from volume overload
Complications of massive transfusion (>10 U)	Hypothermia, coagulopathy, acid–base disturbances, hyperkalaemia, citrate toxicity, iron overload
Other	Air embolism Thrombophlebitis

Station 6
Intramuscular, subcutaneous, and intradermal injection techniques

Specifications: A model or skin pad in lieu of a patient.

Before starting

- Introduce yourself to the patient.
- Discuss the procedure and obtain consent.
- Gather the appropriate equipment.

The equipment

- Non-sterile gloves.
- Drug.
- Diluent (usually sterile water or saline).
- Appropriately sized syringe (e.g. 1 or 2 ml).
- 21G (green) needle and 23G (blue) or 25G (orange) needle.
- Alcohol swab.
- Cotton wool.
- Plaster.
- Sharps bin.

The procedure

- Consult the prescription chart and check:
    - The identity of the patient.
    - The prescription: validity, drug, dose, diluent (if appropriate), route of administration, date and time of administration.
    - Drug allergies, anticoagulation.
- Check the doses and expiry dates of the drugs on their vials.
- Wash your hands and don the gloves.
- Attach a 21G needle to the syringe and draw up the correct volume of the drug, making sure to expel any air in the syringe.
- Remove the needle and attach a 23G needle to the syringe for IM/SC administration or a 25G needle for ID administration.
- Ask the patient to expose his upper arm or leg and ensure that the target muscle is completely relaxed.
- Identify landmarks in an attempt to avoid injuring nerves and vessels.
- Clean the exposed site with an alcohol wipe and allow it to dry.

Intramuscular injection technique

- For older children and adults, the densest portion of the deltoid muscle (above the armpit and below the acromion) is the preferred IM injection site. The gluteal muscle is best avoided as the needle may not reach the muscle and there is a risk

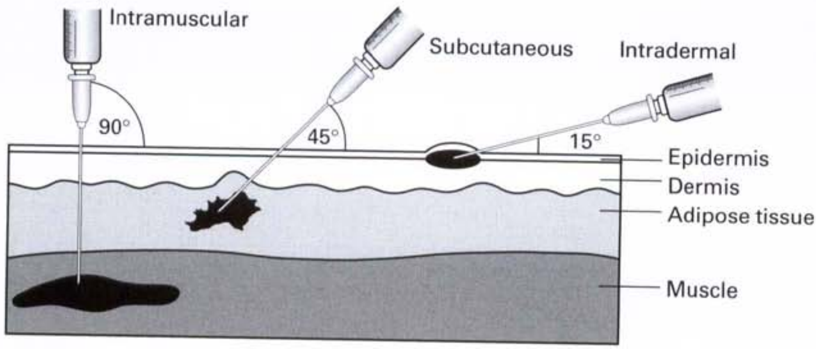


Figure 3. Intramuscular, subcutaneous, and intradermal injection techniques

of damage to the sciatic nerve, not to mention the general embarrassment of the thing. In infants and toddlers, the vastus lateralis muscle in the anterolateral aspect of the middle or upper thigh is the preferred IM injection site.

- With your free hand, slightly stretch the skin at the site of injection.
- Introduce the needle at an 80–90 degree angle to the patient's skin in a quick, firm motion.
- Pull on the syringe's plunger to ensure that you have not entered a blood vessel. If you aspirate blood, you need to start again with a new needle, and at a different site.
- Slowly inject the drug and quickly remove the needle.
- Dispose of the needle in the sharps bin.
- If bleeding occurs, apply gentle pressure over the bleeding/injection site with some cotton wool.

Subcutaneous injection technique

- Bunch the skin between thumb and forefinger, thereby lifting the adipose tissue from the underlying muscle.
- Insert the needle at a 45 degree angle in a quick, firm motion.
- Release the skin.
- Pull on the syringe's plunger to ensure that you have not entered a blood vessel.
- Slowly inject the drug.
- Dispose of the needle in the sharps bin.
- Apply gentle pressure over the injection site with some cotton wool.

Intradermal injection technique

- Stretch the skin taut between thumb and forefinger.
- Hold the needle so that the bevel is uppermost.

- Insert the needle at a 15 degree angle, almost parallel to the skin.
- Ensure that the needle is visible beneath the surface of the epidermis.
- Slowly inject the drug.
- A visible bleb should form. If not, immediately withdraw the needle and start again.
- Dispose of the needle in the sharps bin.

After the procedure

Ensure that the patient is comfortable.

Sign the prescription chart and record the date, time, drug, dose, and injection site of the injection in the medical records.

Ensure that the patient is comfortable.

Ask him if he has any questions or concerns.

Thank him.

Station 7
Intravenous drug injection

Specifications: An anatomical arm in lieu of a patient.

This station is likely to require you to demonstrate and/or talk through the administration of an intravenous (IV) drug with a needle and syringe.

Before starting

Introduce yourself to the patient and confirm their name and date of birth.

Discuss the procedure and obtain consent.

Gather the correct equipment.

The equipment

- Patient's drug chart.
- British National Formulary.
- Non-sterile gloves.
- Drug.
- Diluent (usually sterile water).
- Appropriately sized syringes.
- 21G (green) needle (×2).
- Tourniquet.
- Alcohol wipes.
- Cotton wool.
- Pre-filled 5 ml syringe containing saline flush.
- Sharps bin.

The procedure

- Consult the prescription chart and check:
  - The identity of the patient.
  - The prescription: validity, drug, dose, diluent (if appropriate), route of administration, date and time of administration.
  - Drug allergies.
- Look in the BNF and check the form of the drug, whether it needs reconstituting, the type and volume of diluent required, and the speed of administration.
- Check the name, dose and expiry date of the drug on the vial and the name and expiry date of the diluent.
- Indicate that you would also ask a colleague to confirm the name, dose, and expiry date of the drug and the name and expiry date of the diluent.
- Wash your hands and don the gloves.
- Attach a 21G (green) needle to a syringe and draw up the correct volume of the diluent.
- Reconstitute the drug with the diluent, ensuring that it is completely dissolved.
- Draw up the reconstituted drug into the same syringe.
- Remove the needle and attach a fresh 21G needle to the syringe.

- Apply a tourniquet to the model arm and select a suitable vein.
- Clean the venepuncture site with an alcohol wipe.
- Retract the skin with your non-dominant hand to stabilise the vein and insert the needle into the vein until a flashback is seen.
- Undo the tourniquet.
- Administer the drug at the correct speed.
- Remove the needle from the vein and apply pressure on the puncture site using a piece of cotton wool.
- Dispose of the needle in the sharps bin.
- Remove the gloves and wash your hands.

After the procedure

Ensure that the patient is comfortable.

Sign the prescription chart and record the date, time, drug, dose, and injection site of the intravenous injection in the medical records.

Indicate that you would have your checking colleague countersign it.

Ensure that the patient is comfortable.

Ask him if he has any questions or concerns.

Thank him.

Station 8
Blood glucose measurement and interpretation

Specifications: In this station you are far more likely to be asked to talk through the procedure rather than carry it out on a patient or actor.

Before starting

Introduce yourself to the patient.

Explain the procedure and ask for his consent to carry it out.

Establish when he last ate (fasting blood glucose is usually carried out in the morning before the patient has had anything to eat or drink).

The equipment

In a tray, gather:

- A pair of gloves.
- An alcohol wipe.
- A glucose monitor.
- Test strips.
- A spring-loaded pricker.
- A lancet.
- Cotton wool.

The procedure

- Ask the patient to wash and dry his hands, or use an alcohol wipe to clean the finger that you are going to prick.
- Massage the finger from its base to its tip to increase its perfusion.
- Turn on the glucose monitor and ensure that it is calibrated.
- Check that the test-strips have not expired.
- Insert a test-strip into the glucose monitor.
- Load the lancet into the pricker and prick the side of the finger.

It is less painful to prick the side rather than the tip of a finger because there are comparatively fewer nerve endings there.

- Squeeze the finger to obtain a droplet of blood. If no or insufficient blood is obtained, prick the finger again. If this happens, be sympathetic to the patient's plight.
- Place the droplet of blood on the test-strip, so as to cover the sensor entirely.
- Give the patient some cotton wool to stop any bleeding.
- Record the reading on the monitor. Units are in millimoles per litre.

After the procedure

Tell that patient their blood glucose and explain its significance and any further action that needs to be taken, e.g. fasting blood glucose, glucose tolerance test, laboratory measurement.

Ask the patient if he has any questions or concerns.

Thank the patient.

Table 3. Blood glucose measurement: interpretation of result (Normal results vary from lab to lab)

Normal	**Units are in millimoles per litre**
fasting glucose	< 6.0
non-fasting glucose*	< 7.8
Impaired glucose tolerance	
fasting glucose	6–7
non-fasting glucose	7.8–11.1
Diabetes mellitus	
fasting glucose	≥ 7.0
non-fasting glucose	≥ 11.1

* 2-h post 75 g glucose.

Station 9
Arterial blood gas sampling and interpretation

Specifications: An anatomical arm in lieu of a patient.

Before starting

Introduce yourself to the patient.

Explain the procedure and ensure that the patient consents to it.

Check the case notes for anticoagulant treatment or platelet or clotting abnormalities.

Note the patient's oxygen requirements and body temperature.

Gather the required equipment in a tray.

The equipment

- Non-sterile gloves.
- Alcohol wipes.
- Lignocaine 1%.
- 2 ml syringe and cap for syringe.
- Heparin 1000 U/ml (or a heparinised 2 ml syringe).
- 23G (blue) needle (×2).
- Gauze.
- Sharps bin.

The procedure

- Wash and dry your hands or cleanse them with alcohol gel.
- Position the patient's arm so that the wrist is extended.
- Palpate the radial artery over the head of the radius and locate the site of maximum pulsation.
- Don the gloves.
- Cleanse the site with an alcohol wipe.
- Drape the area.
- Inject lignocaine intradermally around the chosen area, taking care not to puncture the vessel or mask its pulsation. (This step can be omitted depending on patient preference.)
- If you do not have a heparinised syringe, attach a 23G needle to the 2 ml syringe and draw up a little heparin into the syringe.
- Discard the needle into a sharps bin.
- Attach a second 23G needle to the syringe.
- Fix the chosen area between the index and middle fingers of your non-dominant hand.

- Warn the patient to expect a "sharp scratch".
- Insert the needle at 30 degrees to the skin.
- Advance the needle a few millimetres in line with the direction of the artery until you obtain a flashback of bright red arterial blood into the syringe. Gentle aspiration from the syringe may in some cases be required.
- Allow the syringe to fill with 2 ml of arterial blood.
- Pick up a gauze with your non-dominant hand.
- Withdraw the needle and press firmly over the puncture site with the gauze. State that you would do this for 5 minutes, checking regularly for the formation of a haematoma.
- Discard the needle into a sharps bin.
- Expel any air bubbles from the syringe and cap it.
- State that you would immediately take the blood to a blood gas machine for analysis. At this point the examiner may hand you a print out from the machine.

After the procedure

Ensure that the patient is comfortable.

Interpret the print out, if any (see Table 4).

Feedback to the patient/examiner.

Ask the patient if he has any questions or concerns.

Clear up.

Arterial blood gas interpretation (suggested approach for an OSCE station)

1. Assess PaO_2 (11–14 kPa, higher readings may indicate that the patient is receiving oxygen).
2. Assess pH

   ≤ 7.35 is acidosis.

   ≥ 7.45 is alkalosis.
3. Assess $PaCO_2$
   - If > 6.0 kPa there is either respiratory acidosis or respiratory compensation for metabolic alkalosis.
   - If < 4.7 kPa there is either respiratory alkalosis or respiratory compensation for metabolic acidosis.
4. Assess HCO_3
   - If < 22 there is metabolic acidosis or renal compensation for respiratory alkalosis.
   - If > 26 there is a metabolic alkalosis or renal compensation for respiratory acidosis.
5. Combine information from 2, 3, and 4 above to determine the primary disturbance and whether there is any renal or respiratory compensation occurring (see Table 4).

Table 4. Arterial blood gas interpretation

	pH	$PaCO_2$	HCO_3
Respiratory acidosis	↓	↑	→, ↑*
Respiratory alkalosis	↑	↓	→, ↓*
Metabolic acidosis	↓	→, ↓**	↓
Metabolic alkalosis	↑	→, ↑**	↑
Mixed acidosis	↓	↑	↓
Mixed alkalosis	↑	↓	↑

* Renal compensation occurring.

** Respiratory compensation occurring.

Station 10
Urine sample testing and interpretation

Before starting

Introduce yourself to the patient.

Take a very brief history from him.

Explain that you are going to test his urine and explain why.

Ensure that the urine specimen is fresh and that it has been appropriately collected.

The equipment

- Urine dipstick and urine dipstick bottle.
- A pair of gloves.
- A pen and paper (or the patient's case notes).

The procedure

- Put on the gloves.
- Check that the urine is a mid-stream sample.
- Inspect the colour and appearance of the urine.
- Stir the urine bottle to ensure that the urine is mixed.
- Check the expiry date on the urine dipstick jar.
- Briefly immerse the urine dipstick into the urine specimen.
- Tap off any excess urine from the dipstick.
- Hold the strip horizontally.
- Read each colour pad at the designated time printed on the dipstick bottle colour chart.
- Report and record the results.
- Discard the used urine dipstick and the gloves.
- Wash your hands.

After testing the urine

Explain the results to the patient.

Document the results in the patient's notes.

If abnormal, suggest obtaining a second sample of urine or sending the urine for laboratory analysis.

Thank the patient.

Table 5. Urine dipstick: interpretation of results	
Protein	Kidney damage or disease, standing upright for prolonged periods, exercise, fever, pregnancy, rarer causes e.g. leukaemia, multiple myeloma, pre-eclampsia
Blood	Kidney damage or disease, urinary calculi, urinary tract infection, contaminated sample, exercise, dehydration, myoglobinuria
Leukocytes	Urinary tract infection
Nitrites	Bacteriuria, contaminated sample
Glucose	Diabetes mellitus, pregnancy
Ketones	Diabetic ketoacidosis, starvation, alcohol intoxication

Station 11
Scrubbing up for theatre

Before handwashing

State that you would:

- Change into scrubs.
- Put on clogs or plastic overshoes.
- Don a theatre cap, tucking all your hair underneath it.
- Remove all items of jewellery, including your watch.
- Enter the scrubbing room.
- Put on a face mask, and ensure that it covers both the nose and the mouth.
- Open a sterile gown pack *without touching the gown*.
- Lay out a pair of sterile gloves *without touching the gloves*.

Handwashing

- Open a brush packet containing a nail brush and nail pick.
- Open the taps.

! From here on, keep your hands above your elbows at all times.

The social wash

- Wash your hands with soap, lathering up your arms to 2 cm above the elbows.

The second wash

- Use the nail pick from the brush packet to clean under your fingernails.
- Dispense soap onto the sponge side of the brush and use the sponge to scrub from the fingertips to 2 cm above the elbows (30 seconds per arm).

! Dispense soap using your elbow or a foot pedal, not your hands.

- To rinse, start from your hands and move down to your elbows so that the rinse water does not re-contaminate your hands.

The third wash

- Using the brush side of the brush, scrub your fingernails (30 seconds per arm).
- Using the sponge side of the brush, scrub:
  - Each finger and interdigital space in turn (30 seconds per arm).
  - The palm and back of your hands (30 seconds per arm).
  - Your forearm, moving up circumferentially to 2 cm above the elbows (30 seconds per arm).

Remember to keep the brush well soaped at all times.

- To rinse, start from your hands and move down to your elbows.
- Turn the taps off with your elbows.

After handwashing

Use the towels in the gown pack to dry your arms from the fingertips down.

Pick up the gown from the inside, ensuring that it does not touch anything.

Put your arms through the sleeves, but do not put your hands through the cuffs.

Put on the gloves without touching the outside of the gloves. Practise this – it's not easy!

Ask an assistant to tie up the gown for you.

After scrubbing up, keep your hands in front of your chest and do not touch any non-sterile areas, your mask and hat included.

Station 12
Male catheterisation

Specifications: A male anatomical model in lieu of a patient.

Before starting

Introduce yourself to the patient.

Explain the procedure and ask for his consent to carry it out.

Position him flat on the couch with legs apart and groin exposed.

The equipment

On a clean trolley, gather:

- A catheterisation pack.
- Saline solution.
- Sterile gloves.
- A 10 ml pre-filled syringe containing 2% lignocaine gel.
- A 12–16 french Foley catheter.
- A catheter bag.
- A 10 ml syringe containing sterile water.
- Adhesive tape.

The procedure

- Check the expiry date of the catheter.
- Open the catheter pack aseptically, and pour saline solution into the receiver.
- If pre-filled syringes are not provided with the pack, draw up 10 ml sterile water and 10 ml lignocaine gel into separate syringes.
- Wash and dry your hands.
- Put on sterile gloves.
- Drape the patient.
- Place a collecting vessel in the patient's *entre-jambes*.
- With your non-dominant hand, hold the penis with a sterile swab.
- With your dominant hand, retract the foreskin and clean the area around the urethral meatus with saline-soaked swabs.
- Coat the end of the catheter with lignocaine gel and instil 10 ml of lignocaine gel into the urethra. Hold the urethral meatus closed.
- Indicate that the anaesthetic needs about 5 minutes to work.
- Hold the penis so that it is vertical.
- Holding the catheter by its sleeve, gently and progressively insert it into the urethra.
- Once a stream of urine is obtained, inject 10 ml of sterile water to inflate the catheter's balloon, continually ensuring that this does not cause the patient any pain.

- Gently retract the catheter until a resistance is felt.
- Attach the catheter bag.
- Reposition the foreskin.
- Tape the catheter to the thigh.

After the procedure

Ensure that the patient is comfortable.
Thank the patient.
Discard any rubbish.
Record the date and time of catheterisation, type and size of catheter used, volume of water used to inflate the balloon, and volume of urine in the catheter bag.

Station 13
Female catheterisation

Specifications: A female anatomical model in lieu of a patient.

Before starting

Introduce yourself to the patient.
Explain the procedure and ask for her consent to carry it out.
Ask her to undress from the waist down and place a sheet over her.

The equipment

In a clean trolley, gather:

- Two pairs of sterile gloves.
- A catheterisation pack.
- Saline solution.
- A 12–16 french Foley catheter.
- A 10 ml pre-filled syringe containing 2% lignocaine gel.
- A 10 ml syringe containing sterile water.
- A catheter bag.
- Adhesive tape.

The procedure

- Open the catheter pack aseptically and pour antiseptic solution into the receiver.
- If pre-filled syringes are not provided with the pack, draw up 10 ml sterile water and 10 ml lignocaine into separate syringes.
- Wash and dry your hands.
- Put on both pairs of gloves (practise this – it's not easy).
- Ask the patient to remove her sheet and lie flat on the couch, bringing her heels to her buttocks and then letting her knees flop out.
- Drape the patient.
- Place a collecting vessel in the patient's *entre-jambes*.
- Use your non-dominant hand to separate the labia minora.
- Clean the area around the urethral meatus with saline-soaked swabs.
- Coat the end of the catheter with lignocaine gel and instil 5 ml of lignocaine into the urethra.
- Indicate that the anaesthetic needs about 5 minutes to work.
- Discard the outer pair of gloves.
- Holding the catheter by its sleeve, gently and progressively insert it into the urethra.
- Once a stream of urine is obtained, inject 10 ml of sterile water to inflate the catheter's balloon, continually ensuring that this does not cause the patient any pain.

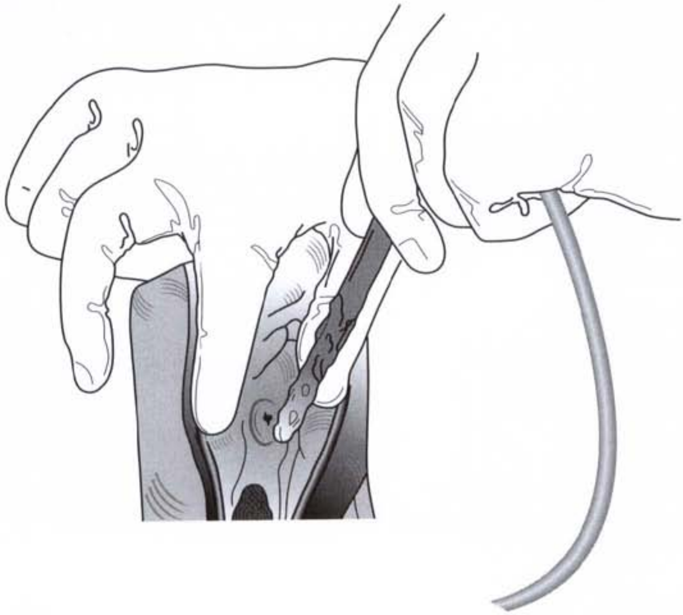


Figure 4. Preparing to insert the catheter

- Gently retract the catheter until a resistance is felt.
- Attach the catheter bag.
- Tape the catheter to the thigh.

After the procedure

Ensure that the patient is comfortable.

Thank the patient.

Discard any rubbish.

Record the date and time of catheterisation, type and size of catheter used, volume of water used to inflate the balloon, and volume of urine in the catheter bag.

Station 14
Examination of a superficial mass and of lymph nodes

Before starting

Introduce yourself to the patient.

Explain the examination and ask him for consent to carry it out.

Position him appropriately and ensure that he is comfortable.

The examination

- Look at the lump and note its location and any changes to the overlying skin, e.g. inflammation, tethering.
- Ask the patient if the lump is painful before you palpate it. Is the pain only brought on by palpation or is it a more constant pain?
- Palpate the lump in a rotary motion with the pads of your fingers. Does the lump feel warm at first touch? Now consider:
  - Number (solitary or multiple).
  - Size.
  - Shape.
  - Surface (smooth or irregular).
  - Consistency (e.g. soft, firm, hard, fluctuant, compressible, rubbery).
  - Mobility (fixation).
- Transilluminate the lump by holding between the fingers of one hand and shining a pen torch to it with the other. A bright red glow indicates fluid whereas a dull or absent glow suggests a solid lesion.
- If appropriate, determine whether the lump is pulsatile. This can be done by observing the lump carefully for pulsatile movements, palpating it, and/or auscultating it.
- If appropriate, examine the draining lymph nodes (see box).

After examining the lump

- Ask the patient if he has any questions or concerns.
- Thank the patient.
- Summarise your findings and offer a differential diagnosis.
- If appropriate, suggest further investigations, e.g. aspirate, biopsy, ultrasound, CT.

Lymph node examination

Head and neck

The patient should be sitting up and examined from behind. With the fingers of both hands, palpate the submental, submandibular, parotid, and pre- and post-auricular nodes. Next palpate the anterior and posterior cervical nodes and the occipital nodes.

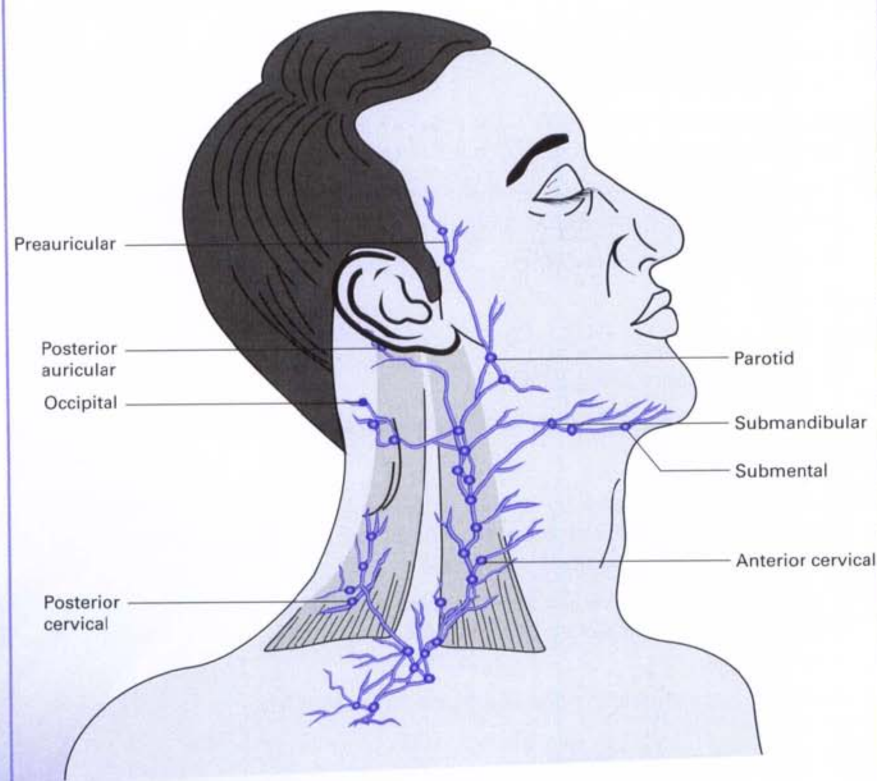


Figure 5. Lymph nodes in the head and neck

Upper body

- Palpate the supraclavicular and infraclavicular nodes on either side of the clavicle.
- Expose the right axilla by lifting and abducting the arm and supporting it at the wrist with your right hand.

- With your left hand, palpate the following lymph node groups:
  - The apical.
  - The anterior.
  - The posterior.
  - The nodes of the medial aspect of the humerus.
- Now expose the left axilla by lifting and abducting the left arm and supporting at the wrist with your left hand.
- With your right hand, palpate the lymph node groups, as listed above.

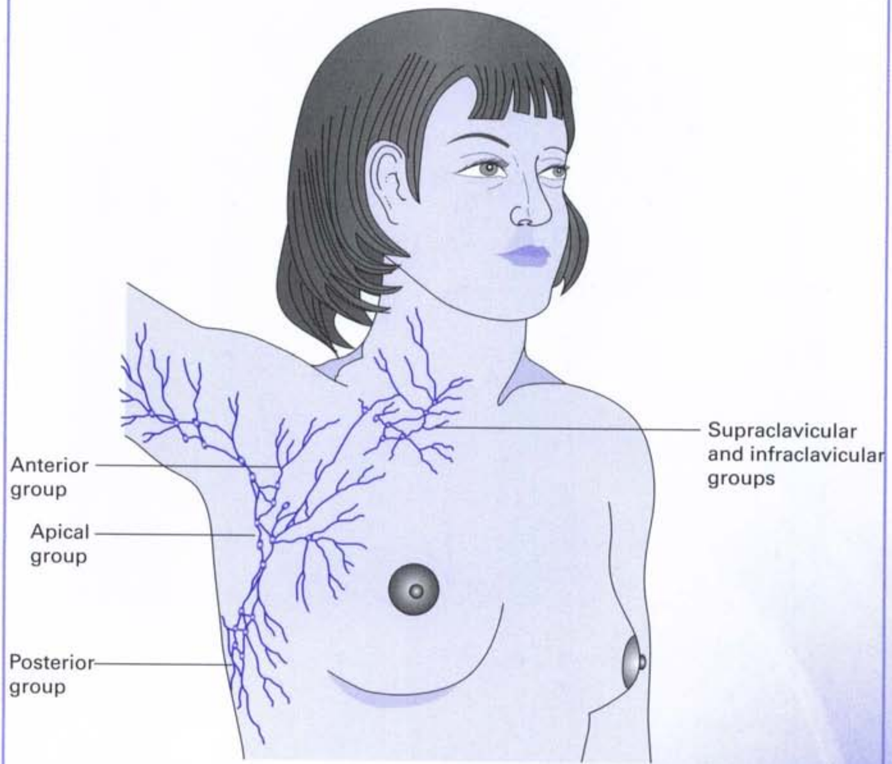


Figure 6. Lymph nodes of the upper body

Lower body

Palpate the superficial inguinal nodes (horizontal and vertical), which lie below the inguinal ligament and near the great saphenous vein respectively, then the popliteal node in the popliteal fossa.

Station 15
Chest X-ray interpretation

A systematic approach to interpreting X-rays not only fills out the time and impresses the examiner, but also minimises your chances of missing any abnormalities. Before saying anything, it is an excellent idea to spend one minute looking at the X-ray, rubbing your chin and organising your thoughts.

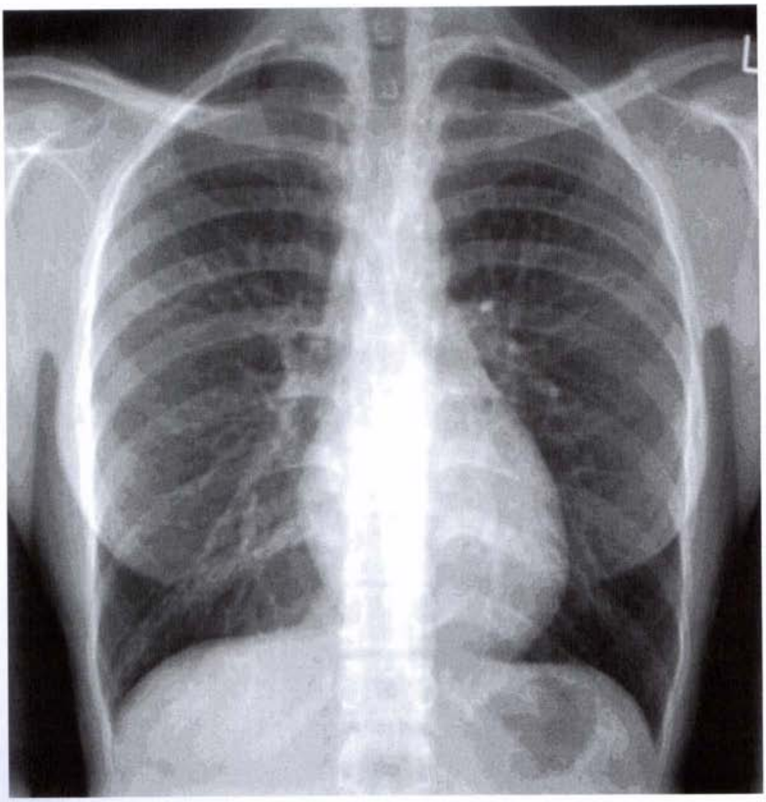


Figure 7. Normal chest X-ray

1. The X-ray

- Name and age of the patient.
- Date of the X-ray.
- PA, AP, or lateral?
- Erect or supine?
- Rotation – if there is no rotation, the distances from the vertebral spines to the medial ends of the clavicles should be equal.
- Penetration – if penetration is normal, the upper half of the thoracic spine should be discernible.

Erect or supine?

An X-ray can be confirmed as having been taken in the erect position if the gastric air bubble is found lying under the left hemidiaphragm.

AP films are almost invariably taken supine, and this has major implications for interpretation. A supine film differs from an erect film in that:

- There is an enlarged heart size.
- The diaphragm is higher, resulting in an apparent decrease in lung volume.
- Pleural fluid levels lie vertically, resulting in an opacification of the lung field.
- Any prominence of upper zone vessels does not suggest left heart failure.

2. Interventions

Make a note of any chest drains, ECG pads, etc., that may be visible on the X-ray.

3. The skeleton

Inspect the ribs, the shoulder girdles, and the spine.

4. The soft tissues

Inspect the breasts, the chest wall, and the soft tissues of the neck. Look for any distortion, and for any opacities and translucencies.

5. The lungs and hila

The lungs: Check the lung volumes, then carefully inspect the lung fields for any opacity or radiolucency.

The hila: Inspect the hila, the densities created by the pulmonary arteries and the superior pulmonary veins of either lung for any abnormal opacities. Check their positions: the left hilum should be 2–3 cm higher than its right counterpart.

6. The pleura

Systematically check *all* lung margins, looking for pleural opacity, pleural displacement, and loss of clarity of the pleural edge (the so-called *silhouette sign*).

7. The diaphragm

Inspect the diaphragm and the area underneath it. The right hemidiaphragm should be at least 3 cm higher than the left.

8. The mediastinum and heart

First look for any mediastinal shift. Then calculate the cardiothoracic ratio (CTR) by dividing the maximal diameter of the heart by the maximal diameter of the chest. In a PA film the CTR should be 0.5 or less. Inspect the trachea and right and left main bronchi. Then inspect the aortic arch, the pulmonary artery, and the heart. Are there any abnormal opacities (masses) or radiolucencies (pneumomediastinum)?

9. Summarise your findings

Table 6. Most common conditions likely to appear in a chest X-ray interpretation station	
Pneumonia	Pneumothorax
Pleural effusion	Lung cancer
Pulmonary oedema	Tuberculosis
Emphysema	Heart failure
Fibrosis	Rib fractures

! **Learn their signs.**

Cardiovascular medicine

Station 16
Chest pain history

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to uncover the nature of his chest pain, and ask for his consent to do this.

Ensure that he is comfortable; if not, make sure that he is.

The history

- Name, age, occupation, and ethnic origin.

Presenting complaint and history of presenting complaint

- Ask about the nature of the chest pain. Use open questions and give the patient the time to tell his story. Also remember to be empathetic: chest pain can be a very frightening experience.
- Elicit the patient's ideas, concerns, and expectations.
- For any pain, determine its:
  - Site and radiation.
  - Character.
  - Severity (e.g. 1 to 10, sleep disturbance).
  - Onset and duration.
  - Aggravating and alleviating factors (exercise, cold air, large meals, alcohol, movement).
  - Associated symptoms and signs. Ask specifically about nausea and vomiting, shortness of breath, dizziness, cough, and palpitations.
- Ask about any previous episodes of chest pain.

Past medical history

- Current, past, and childhood illnesses.
- In particular, ask about coronary heart disease, myocardial infarction, rheumatic fever, stroke, intermittent claudication, hypertension, hyperlipidaemia, diabetes, smoking, and alcohol use.
- Surgery.

Drug history

- Prescribed medication, including the oral contraceptive pill if female.
- Over-the-counter medication.
- Recreational drugs.
- Allergies.

Family history

- Parents, siblings, and children. Ask specifically about heart disease, hypertension, and other heritable cardiovascular risk factors.

Social history

- Effect of the chest pain on the patient's life:
  - Employment.
  - Housing.
  - Hobbies.

After taking the history

Ask the patient if there is anything else that he might add that you have forgotten to ask. This is an excellent question to ask in clinical practice, and an even better one to ask in exams.

Thank the patient.

Summarise your findings and offer a differential diagnosis.

State that you would like to examine the patient and order some investigations, for example, ECG and chest X-ray, to confirm your diagnosis.

Table 7. Most common conditions likely to appear in a chest pain history station
Angina
Gastro-oesophageal reflux disease
Chest infection
Pleurisy
Pulmonary embolus
Musculoskeletal complaint
Panic attack

! If you cannot differentiate angina from gastro-oesophageal reflux disease, advise a therapeutic trial of an antacid or a nitrate and/or record an ECG.

Station 17
Cardiovascular risk assessment

Cardiovascular risk factors can usefully be divided into fixed (non-modifiable) and modifiable risk factors. Fixed risk factors include older age, male gender, family history, and a South Asian background. Modifiable risk factors include hypertension, hyperlipidaemia, diabetes, smoking, alcohol, exercise, and stress. Having one or more of these risk factors does not mean that a person is going to develop cardiovascular disease, but merely that he is at increased probability of developing it. Conversely, having no risk factors is not a guarantee that a person is not going to develop cardiovascular disease.

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to assess his risk of cardiovascular disease (coronary heart disease, cerebrovascular disease, vascular disease) and ask for his consent to do this.

! Remember to be tactful in your questioning, and sensitive in the way that you respond to the patient's ideas and concerns.

The risk assessment

If this information has not already been provided or disclosed, find out the patient's reason for attending. Then note or enquire about:

Fixed risk factors

1. Age.
2. Sex.
3. Ethnic background. People from a South Asian background are at a notably higher risk of cardiovascular disease.
4. Family history.
5. High levels of fibrinogen coagulation factor.

Modifiable risk factors

6. Hypertension. If hypertensive, ask about latest blood pressure measurement, time since first diagnosis, and any medication being taken.
7. Hyperlipidaemia. If hyperlipidaemic, ask about latest serum cholesterol level, time since first diagnosis, and any medication being taken.
8. Diabetes mellitus. If diabetic, ask about medication being taken, level of diabetes control being achieved, time since first diagnosis, and presence of complications.

9. Cigarette smoking. If a smoker or ex-smoker, ask about number of years spent smoking and average number of cigarettes smoked per day. Does the patient also smoke roll-ups and cannabis?
10. Alcohol. Ask about the number of units of alcohol drunk in a day. Note that depending on the amount that is drunk, alcohol can be either a protective factor or a risk factor.
11. Lack of exercise. Ask about amount of exercise taken in a day or week. Does the patient walk to work or walk to the shops?
12. Stress. Ask about occupational history and home life.

After the assessment

Ask the patient if there is anything he would like to add that you may have forgotten to ask about.

Give him feedback on his cardiovascular risk (e.g. low, medium, high), and indicate a further course of action if appropriate (e.g. further investigations or further appointment to discuss reducing modifiable risk factors).

Address any remaining concerns.

Station 18
Cardiovascular examination

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Position him at 45 degrees, and ask him to remove his top(s).

Ensure that he is comfortable.

The examination

General inspection

- From the end of the couch, observe the patient's general appearance (age, state of health, nutritional status, and any other obvious signs). Is the patient breathless or cyanosed?
- Inspect the precordium for the presence of any abnormal pulsation and the chest for any scars. A median sternotomy might have been performed for coronary artery bypass grafting, for valve surgery, or for the repair of a congenital defect. Don't miss a pacemaker if it is there!

Inspection and examination of the hands

- Take both hands noting:
  - Temperature.
  - Colour.
  - The presence of clubbing (endocarditis, cyanotic congenital heart disease).
  - The presence of splinter haemorrhages (subacute infective endocarditis).
  - The presence of any nail signs (leukonychia – hypoalbuminaemia, koilonychia – iron deficiency).
- Determine the rate, rhythm, and character of the radial pulse. Take the pulse in both arms to exclude coarctation of the aorta.
- Indicate that you would like to record the blood pressure (see Station 1).

Inspection and examination of the head and neck

- Inspect the sclera and conjunctivae for signs of anaemia.
- Inspect the mouth for signs of central cyanosis.
- Assess the jugular venous pressure and the jugular venous pulse form: having asked the patient to turn his head *slightly* to one side, look at the internal jugular vein medial to the clavicular head of sternocleidomastoid. Assuming that the patient is at 45 degrees, the vertical height of the jugular distension from the sternal angle should be no greater than 4 cm.

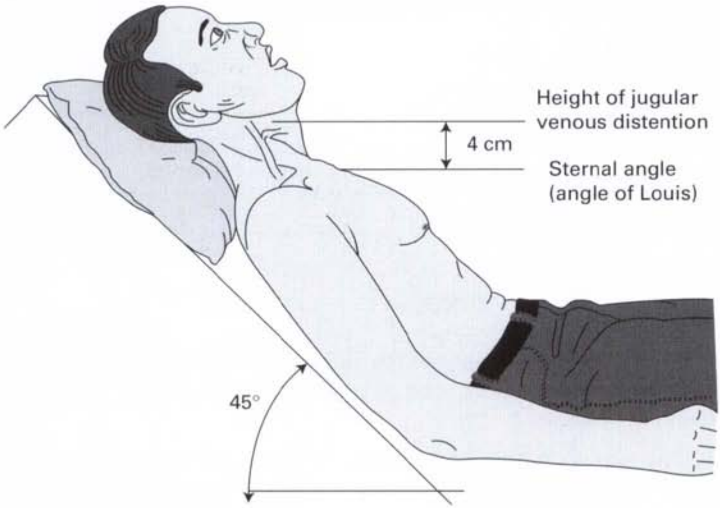


Figure 8. Assessing the jugular venous pressure

- Locate the carotid pulse and assess its character.

! Never palpate both carotid pulses simultaneously.

Palpation of the heart

! Ask the patient if he has any chest pain.

- Determine the location and character of the apex beat. It is normally located at the mid-clavicular line, at the level of the fifth intercostal space. A "tapping" apex beat is likely to indicate mitral stenosis; a "heaving" apex beat is likely to indicate left ventricular hypertrophy.
- Place your hand over the cardiac apex and on either side of the sternum and feel for any heaves and thrills.

Auscultation of the heart

- Listen for heart sounds, additional sounds, murmurs, and pericardial rub. Using the stethoscope's diaphragm, listen in the:
  - *Aortic area*
    Right second intercostal space near the sternum.
  - *Pulmonary area*
    Left second intercostal space near the sternum.
  - *Tricuspid area*
    Left third, fourth, and fifth intercostal spaces near the sternum.
  - *Mitral area*
    Left fifth intercostal space, in the mid-clavicular line.

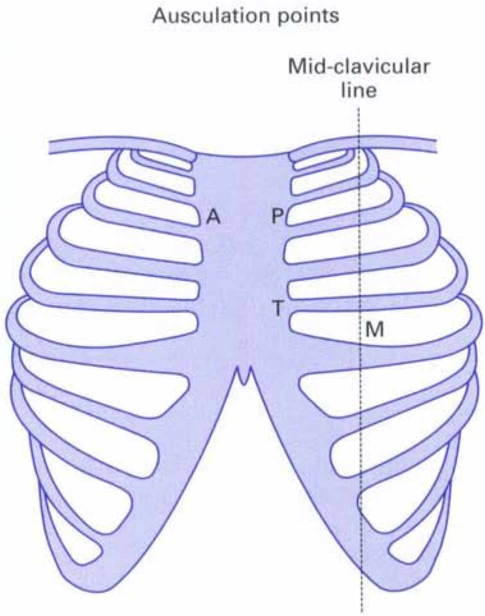


Figure 9. Auscultation points

- In addition:
  - Ask the patient to bend forward and to hold his breath in expiration. Using the stethoscope's diaphragm, listen at the left sternal edge in the fourth intercostal space for the mid-diastolic murmur of aortic regurgitation.
  - Ask the patient to turn onto his left side and to hold his breath in expiration. Using the stethoscope's *bell*, listen in the mitral area for the mid-diastolic murmur of mitral stenosis.
  - Listen over the carotid arteries for any bruits.

Table 8. Grading murmurs

I	Barely audible murmur
II	Soft and localised murmur
III	Murmur of moderate intensity that is immediately audible
IV	Murmur of loud intensity
V	Murmur of loud intensity with a palpable precordial thrill
VI	As above, except that the murmur is audible even as the stethoscope is lifted from the chest wall

Table 9. Common conditions associated with murmurs	
Aortic stenosis	Slow-rising pulse, heaving cardiac apex, mid-systolic murmur best heard in the aortic area and radiating to the carotids and cardiac apex
Mitral regurgitation	Displaced, thrusting cardiac apex, pan-systolic murmur best heard in the mitral area and radiating to the axilla
Aortic regurgitation	Collapsing pulse, thrusting cardiac apex, diastolic murmur best heard at the left sternal edge
Mitral valve prolapse	Mid-systolic click, late-systolic murmur best heard in the mitral area

Chest examination

- Percuss and auscultate the chest, especially at the bases of the lungs. Heart failure can cause pulmonary oedema and pleural effusions.

Abdominal examination

- Palpate the abdomen to exclude ascites and/or an enlarged liver.
- Check for the presence of an aortic aneurysm.
- Ballot the kidneys and listen for any renal artery bruits.

Ankle oedema

- Test for the dependent or "pitting" oedema of cardiac failure.

Peripheral pulses

- Feel the temperature of the feet and then palpate the:
  - Femoral pulses.
  - Popliteal pulses.
  - Posterior tibial pulses.
  - Dorsalis pedis pulses.

After the examination

Indicate that you would test the urine, examine the retina with an ophthalmoscope and, if appropriate, order some key investigations, e.g. ECG, CXR, echocardiogram.

Cover the patient up.

Thank the patient.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 10. Most common conditions likely to come up in a cardiovascular examination station
Murmurs (see Table 9)
Heart failure
Median sternotomy scar
Pacemaker

Station 19
Peripheral vascular system examination

In this station you may be asked to restrict your examination to the arterial or venous system only. You must therefore learn to separate out the signs for either.

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Expose his legs, including his feet.

The examination

Inspection

- Skin changes: atrophy, pallor, shininess, pigmentation, loss of body hair.
- Scars.
- Signs of gangrene: blackened skin, nail infection, amputated toes.
- Venous and arterial ulcers. Remember to look in the interdigital spaces.
- Oedema.
- Varicose veins (ask the patient to stand up).

! Do not make the common mistake of asking the patient to stand up before having examined for varicose veins.

Palpation and special tests

- Skin temperature. Compare both legs.
- Capillary refill. Compress a nail bed for 5 seconds and let go. It should take less than 2 seconds for the nail bed to return to its normal colour.
    - Peripheral pulses.
    - Femoral pulse at the inguinal ligament.
    - Popliteal pulse in the popliteal space (flex the knee).
    - Posterior tibial pulse behind the medial malleolus.
    - *Dorsalis pedis* pulse over the dorsum of the foot, just lateral to the extensor tendon of the great toe.
- Buerger's test:
    - Lift both of the patient's legs to a 45 degree angle and note the change in skin colour.

- Ask the patient to dangle his legs over the edge of the couch. If the arterial supply is normal, the original skin colour should return in less than 10 seconds.

- Oedema. Firm "non-pitting" oedema is a sign of chronic venous insufficiency (compare to the "pitting" oedema of cardiac failure).
- Varicose veins. Tenderness on palpation suggests thrombophlebitis.
- Trendelenburg's test:
  - Elevate the lag to 90 degrees to drain the veins of blood.
  - Apply a tourniquet to the upper thigh.
  - Ask the patient to stand up – the veins should gradually fill up in 30–35 seconds.
  - Release the tourniquet: sudden additional filling of the veins is a sign of sapheno-femoral incompetence.

Auscultation

- Femoral arteries.
- Abdominal aorta.

After the examination

Thank the patient.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Station 20
Ankle-brachial pressure index (ABPI)

Specifications: You are most likely to be requested to measure the ABPI for one arm and ankle only.

Calculating and interpreting ABPI

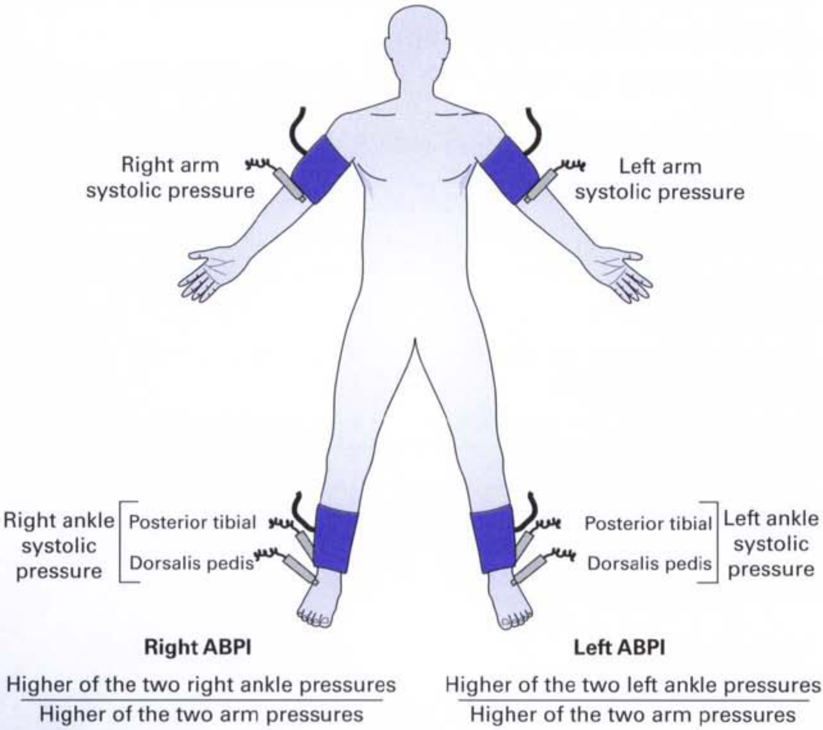


Figure 10. Calculating ABPI

Table 11. ABPI interpretation

ABPI	Interpretation
>0.95	Normal
0.5–0.9	Claudication pain
<0.5	Rest pain
<0.2	Ulceration and gangrene

Before starting

Introduce yourself to the patient.

Explain the procedure and ask him for consent to carry it out.

Position him at 45 degrees with his sleeves and trousers rolled up.

Ensure that he is comfortable.

State that you would allow him 5 minutes resting time before taking measurements.

The procedure

Brachial systolic pressure

- Place an appropriately sized cuff around the arm, as for any blood pressure recording.
- Locate the brachial pulse by palpation and apply contact gel at this site.
- Angle the hand-held Doppler probe at 45 degrees to the skin and locate the best possible signal. Apply only gentle pressure, or else you risk occluding the artery.
- Inflate the cuff until the signal disappears.
- Progressively deflate the cuff and record the pressure at which the signal reappears.
- Repeat the procedure for the other arm or state that you would do so.
- Retain the higher of the two readings.

! **Take care not to allow the probe to slide away from the line of the artery.**

Ankle systolic pressure

- Place an appropriately sized cuff around the ankle immediately above the malleoli.
- Locate the *dorsalis pedis* pulse by palpation or with the hand-held Doppler probe and apply contact gel at this site.
- Angle the hand-held Doppler probe at 45 degrees to the skin and locate the best possible signal. Apply only gentle pressure, or else you risk occluding the artery.
- Inflate the cuff until the signal disappears.
- Progressively deflate the cuff, and record the pressure at which the signal reappears.
- Repeat the procedure for the posterior tibial pulse.
- Repeat the procedure for the *dorsalis pedis* and posterior tibial pulses of the other ankle or state that you would do so.
- For each ankle, retain the higher of the two readings.

After the procedure

Clean the patient's skin of contact gel and allow him time to restore his clothing.

Clean the hand-held Doppler probe of contact gel.

Wash your hands.

Calculate the ABPI and explain its significance to the patient.

Ask the patient if he has any questions or concerns.

Thank the patient.

Station 21
ECG recording and interpretation

Before starting

Introduce yourself to the patient.

Explain the procedure to him, specifying that it is not painful, and ask him for his consent to carry it out.

Position him so that he is lying on a couch.

Ask him to expose his upper body and ankles.

The equipment

- A 12-lead ECG machine.
- Electrode sticky pads.

The procedure

- Indicate that you may need to shave the patient's chest to apply the electrode pads.
- Attach the electrode pads as per the leads.
- Attach the limb leads, one on each limb. The longest leads attach to the legs, above the ankles, and the mid-length leads attach to the upper arms.

Table 12. Colour codes for ECG limb and chest leads

Limb leads	
Red	Right arm
Yellow	Left arm
Green	Left leg
Black	Right leg
Chest leads	
Red	V1
Yellow	V2
Green	V3
Brown	V4
Black	V5
Violet	V6

- Place the chest leads (the shortest leads) such that:
  - V1 is in the fourth intercostal space at the right sternal margin.
  - V2 is in the fourth intercostal space at the left sternal margin.

- V3 is midway between V2 and V4.
- V4 is in the fifth intercostal space in the left mid-clavicular line.
- V5 is at the same horizontal level as V4, but in the anterior axillary line.
- V6 is at the same horizontal level as V4 and V5, but in the mid-axillary line.

- Turn the ECG machine on and check calibration (1 mV = 1 cm in height) and paper speed (25 mm/s).
- Ensure that the patient is relaxed and comfortable and press on "Analyse ECG" or a similar button.

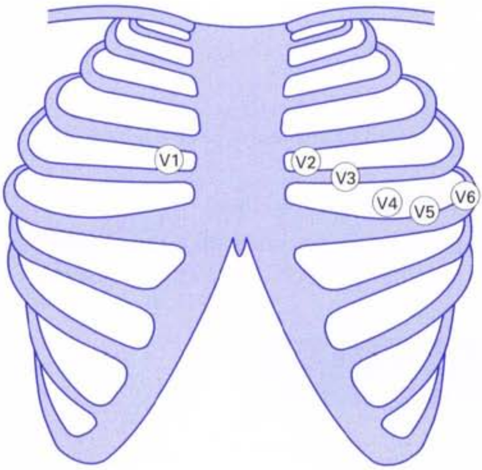


Figure 11. Lead placement

After recording the ECG

Analyse the ECG for any life-threatening abnormalities.

Remove the leads.

Discard the electrode pads.

Ensure that the patient is comfortable.

Thank the patient.

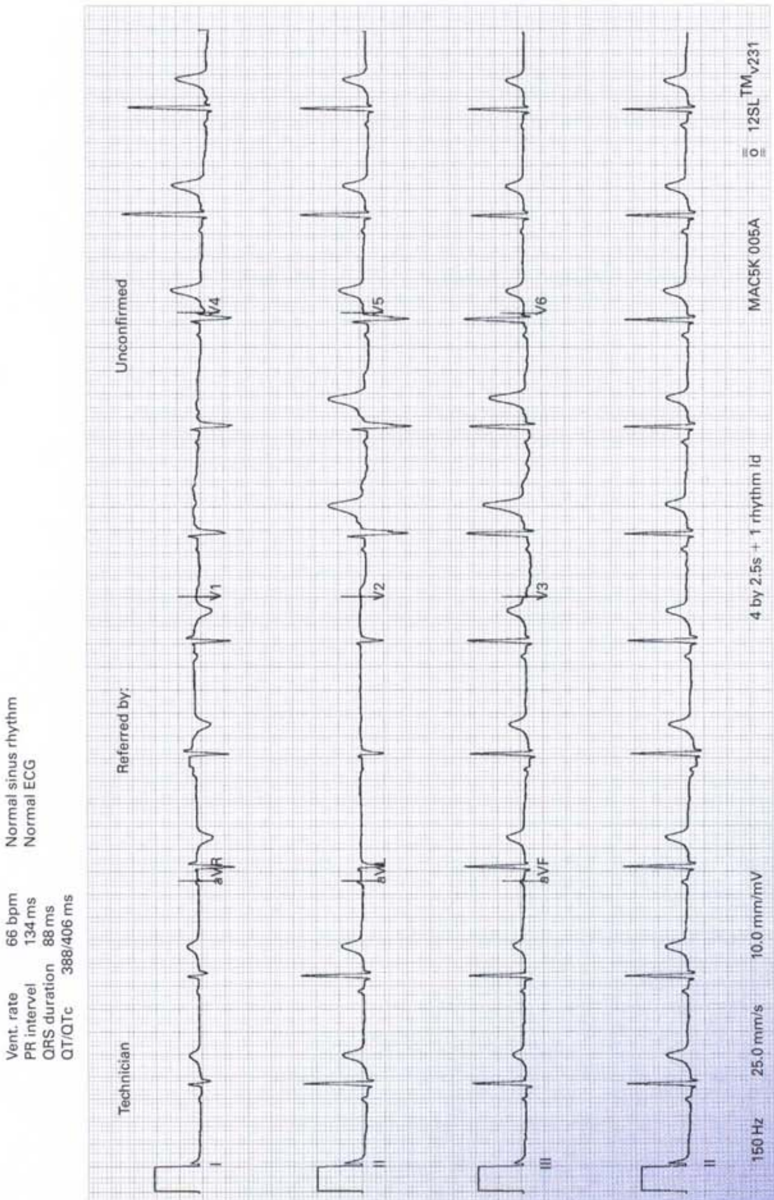


Figure 12. Normal ECG

ECG interpretation in 10 steps (suggested approach for an OSCE station)

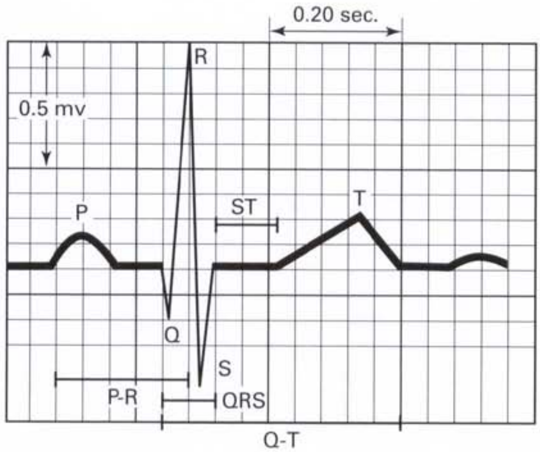


Figure 13. The basic ECG complex

1. Check labelling (name, date, calibration, paper speed, etc.) and eyeball the ECG.
2. Rate: divide 300 by the number of large squares between consecutive R waves.
3. Rhythm: ensure that each P wave is followed by a QRS complex. Use a pen and card to determine whether the rhythm is regular or irregular.
4. Axis:
   - Normal axis: the QRS complexes are predominantly positive in both leads I and II.
   - Left axis deviation: the QRS complex is predominantly positive in lead I but is predominantly negative in lead II.
   - Right axis deviation: the QRS complexes are predominantly negative in both leads I and II.
5. P waves: normal is less than 2.5 mm in height and 0.11 s in width in lead II.
6. PR interval: normal is 0.12–0.20 s or 3–5 small squares in duration.
7. QRS complex:
   - Normal is < 0.12 s or 3 small squares in duration.
   - The sum of the S wave in V2 and an R wave in V5 or V6 should not be greater than 35 mm.
   - Q waves should not be deeper than one small square or 25% of the following R wave.

8. ST segment: the ST segment should not be elevated or depressed.
9. T waves: T waves should not be tall, flattened, or inverted. T wave inversion in leads I, II, and V4–6 is always abnormal.
10. QT interval: Normal is less than 400 ms or 2 large squares or half the R–R interval.

! **Try to familiarise yourself with different patterns of ECG, e.g. left ventricular hypertrophy, ischaemic heart disease, acute myocardial infarct, atrial fibrillation, heart block, pulmonary embolus. Study ECG libraries such as the one that can be found at: http://www.ecglibrary.com/ecghome.html.**

Respiratory medicine

Station 22
Breathlessness history

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to uncover the nature of his breathlessness, and ask for his consent to do this.

Ensure that he is comfortable; if not, make sure that he is.

The history

- Name, age, and occupation.

Presenting complaint

- Ask about the nature of the breathlessness. Use open questions.
- Elicit the patient's ideas, concerns, and expectations.

History of presenting complaint

Ask about:

- Onset, duration, and variability of breathlessness.
- Provoking and relieving factors.
- Associated symptoms (wheeze, stridor, cough, sputum, haemoptysis, fever, night sweats, anorexia, loss of weight, chest pain, dizziness).
- Severity (exercise tolerance, sleep disturbance – orthopnoea, paroxysmal nocturnal dyspnoea).
- Previous episodes of breathlessness.
- Smoking.

Past medical history

- Current, past, and childhood illnesses. Ask specifically about atopy (asthma/eczema/hay fever), pneumonia, bronchitis, and tuberculosis.
- Previous investigations (e.g. bronchoscopy, chest X-ray).
- Surgery.

Drug history

- Prescribed medication (especially bronchodilators, NSAIDs, β-blockers, ACE inhibitors, amiodarone, and steroids).
- Over-the-counter medication.
- Recreational drugs.
- Allergies.

Family history

- Parents, siblings, and children. Focus especially on respiratory diseases such as atopy, cystic fibrosis, tuberculosis, and emphysema (α1-antitrypsin deficiency).

Social history

- Employment, past and present. Ask about occupational exposure (mining, farming, asbestos).
- Housing.
- Travel, tuberculosis contacts.
- Use of alcohol.
- Hobbies (especially pigeons and budgerigars!).

After taking the history

Ask the patient if there is anything else he might add that you have forgotten to ask.

Thank the patient.

Summarise your findings and offer a differential diagnosis.

State that you would like to examine the patient and carry out some investigations to confirm your diagnosis.

Table 13. Most common conditions likely to appear in a breathlessness history station

Pneumonia	Tuberculosis
Pleural effusion	Heart failure
Emphysema	Chronic obstructive pulmonary disease
Pneumothorax	Panic attack
Lung cancer	

Station 23
Respiratory system examination

Before starting

- Introduce yourself to the patient.
- Explain the examination and ask for his consent to carry it out.
- Position him at 45 degrees, and ask him to remove his top(s).
- Ensure that he is comfortable.

The examination

General inspection

- From the end of the couch, observe the patient's general appearance (age, state of health, nutritional status, and any other obvious signs). In particular, is he breathless or cyanosed? Does he have to sit up to breathe? Is his breathing audible? Is he coughing?
- Note:
  - The rate, depth, and regularity of the patient's breathing.
  - Any deformities of the chest (barrel chest, *pectus excavatum*, *pectus carinatum*) and spine.
  - Any asymmetry of chest expansion.
  - The use of accessory muscles of respiration.
  - The presence of operative scars.

Inspection and examination of the hands

- Take both hands and assess them for colour and temperature.
- Look for clubbing.
- Determine the rate, rhythm, and character of the radial pulse. Is it the bounding pulse of carbon dioxide retention?
- Test for asterixis, the flapping tremor of carbon dioxide retention, by showing the patient how to extend both arms with the wrists dorsiflexed and the palms facing forwards.

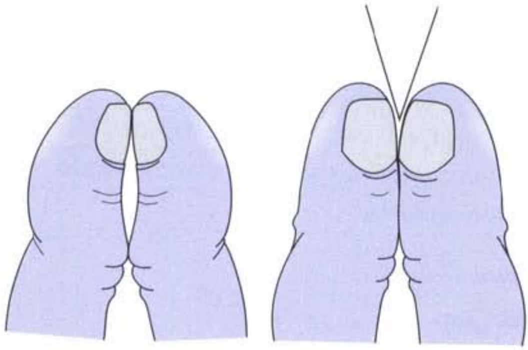


Figure 14. Clubbing. When the dorsum of a finger from one hand is opposed to the dorsum of a finger from the other hand, a diamond shaped window is formed at the base of the nailbeds. In clubbing, this diamond shaped window is obliterated, and a distal angle is created between the fingers

Table 14. The principal causes of clubbing
5 groups, 10 causes:
Respiratory causes
Carcinoma
Fibrosing alveolitis
Chronic suppurative lung disease
Cardiac causes
Infective endocarditis
Cyanotic heart disease
Hepatic causes
Cirrhosis
Gastrointestinal causes
Ulcerative colitis
Crohn's disease
Coeliac disease
Familial

Table 15. The principal causes of asterixis
Hepatic failure
Renal failure
Cardiac failure
Respiratory failure
Electrolyte abnormalities (hypoglycaemia, hypokalaemia, hypomagnesaemia)
Drug intoxication, e.g. alcohol, phenytoin
CNS causes

Inspection and examination of the head and neck

- Inspect the sclera and conjunctivae for signs of anaemia.
- Inspect the mouth for signs of central cyanosis.
- Assess the jugular venous pressure and the jugular venous pulse form (*cor pulmonale* – right-sided heart failure).
- Palpate the cervical, supraclavicular, infraclavicular, and axillary lymph nodes.

Palpation of the chest

! **Ask the patient if he has any chest pain.**

- Palpate for tracheal deviation by placing the index and middle fingers of one hand on either side of the trachea in the suprasternal notch. Alternatively, place the index and annular fingers of one hand on either clavicular head and use your middle finger (called the *vulgaris* in Latin) to palpate the trachea.
- Palpate for the position of the cardiac apex.

Note: Carry out all subsequent steps on the front of the chest and, once this is done, repeat them on the back of the chest. This is much more elegant than to keep on asking the patient to bend forwards and backwards like a Jack-in-the-box.

- Palpate for equal chest expansion, comparing one side to the other. Reduced unilateral chest expansion might be caused by pneumonia, pleural effusion, pneumothorax, and lung collapse. If there is a measuring tape, measure the chest expansion.
- Test for tactile fremitus by placing the flat of the hands on the chest and asking the patient to say "ninety-nine". Any other numbers are at your risk and peril.

Percussion of the chest

- Percuss the chest. Start at the apex of one lung, and compare one side to the other. Do not forget to percuss over the clavicles and on the sides of the chest. For any one area, is the resonance increased (emphysema, pneumothorax) or decreased (consolidation, fibrosis, fluid)?

Auscultation of the chest

- Ask the patient to take deep breaths through the mouth and, using the diaphragm of the stethoscope, auscultate the chest. Start at the apex of one lung, and compare one side to the other. Are the breath sounds vesicular or bronchial? Are there any other added signs?
- Test for vocal resonance by asking the patient to say, "ninety nine". If you have already tested for tactile fremitus, it is not necessary to test for vocal resonance.
- Different breath sounds, including the ever elusive whispering pectoriloquy, can be listened to on the University of Loyola's website at: http://www.meddean.luc.edu/lumen/MedEd/medicine/pulmonar/pd/auditory.htm.

After the examination

Indicate that you would like to look at the sputum pot, measure the PEFR (see Station 24) and, if appropriate, order some key investigations, e.g. a CXR, FBC, CRP, etc.

Cover the patient up.

Thank the patient.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 16. Most common conditions likely to appear in a respiratory examination station

Chronic and relatively stable chest conditions such:	
➤	Chronic obstructive pulmonary disease
➤	Cryptogenic fibrosing alveolitis
➤	Lobectomy

Station 24
PEFR meter explanation

! Read in conjunction with Station 106: Explaining skills.

Before starting

Introduce yourself to the patient.

Check his understanding of asthma.

Explain the importance of using a PEFR (Peak Expiratory Flow Rate) meter and the importance of using it correctly.

Explain that the PEFR meter is to be used first thing in the morning and at any time he has symptoms of asthma.

Explain the use of a PEFR meter

Ask the patient to (and, importantly, demonstrate):

- Attach a clean mouthpiece to the meter.
- Slide the marker to the bottom of the numbered scale.
- Stand or sit up straight.
- Hold the peak flow meter horizontal, keeping his fingers away from the marker.
- Take as deep a breath as possible and hold it.
- Insert the mouthpiece into his mouth, sealing his lips around the mouthpiece.
- Exhale as hard as possible into the meter.
- Read and record the meter reading.
- Repeat the procedure three to six times, keeping only the highest score.
- Check this score against the peak flow chart or his previous readings.

- Check the patient's understanding by asking him to carry out the procedure.
- Ask him if he has any questions or concerns.

Interpret a PEFR reading

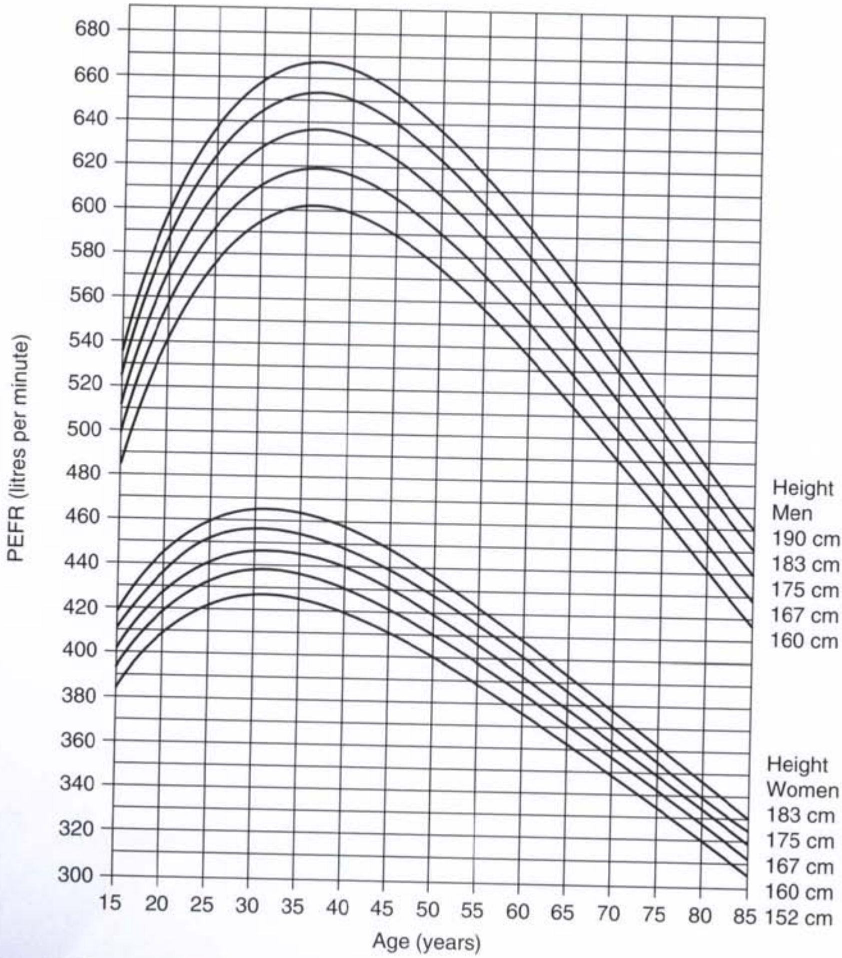


Figure 15. Expected peak flow rates in litres per minute according to age, sex, and height

Station 25
Inhaler use explanation

Read in conjunction with Station 106: Explaining skills.

Before starting

Introduce yourself to the patient.

Check his understanding of asthma.

Explain that an inhaler device delivers aerosolised bronchodilator medication for inhalation and that, if used correctly, provides fast and efficient relief from bronchospasm (or airway irritation and narrowing). Furthermore, it is relatively free of systemic side-effects.

Instruct on the use of an inhaler

Ask the patient to (and, importantly, demonstrate):

- Vigorously shake the inhaler.
- Remove the cap from the mouthpiece.
- Hold the inhaler between index finger and thumb.
- Place the inhaler upright about 3–5 cm in front of his mouth.
- Breathe out completely.
- Breathe in deeply, and simultaneously activate the inhaler.
- Close his mouth and hold his breath for 10 seconds and then breathe out.
- Repeat the procedure after 1 minute if relief is insufficient.

- Check the patient's understanding by asking him to carry out the procedure.

If the patient has difficulty co-ordinating breathing in and inhaler activation, he may benefit from the added use of an aerochamber inhaler spacer.

- Ask the patient if he has any questions or concerns.

Station 26
Drug administration via a nebuliser

A nebuliser transforms a drug solution into a fine mist for inhalation via a mouthpiece or face mask. Drugs used in nebulisers include bronchodilators, corticosteroids, antibiotics (e.g. colistin), and pentamidine.

Before starting

- Introduce yourself to the patient.
- Explain the need for a nebuliser and the procedure involved, and ensure consent.
- Explain the drug in the nebuliser and its common side-effects.

The equipment

Gather:

- An air compressor and tubing.
- A nebuliser cup.
- A mouthpiece or mask.
- A syringe.
- Drug or drug solution (e.g. salbutamol 2.5 ml) in a vial.
- Diluent (e.g. sodium chloride 0.9%) if needed.

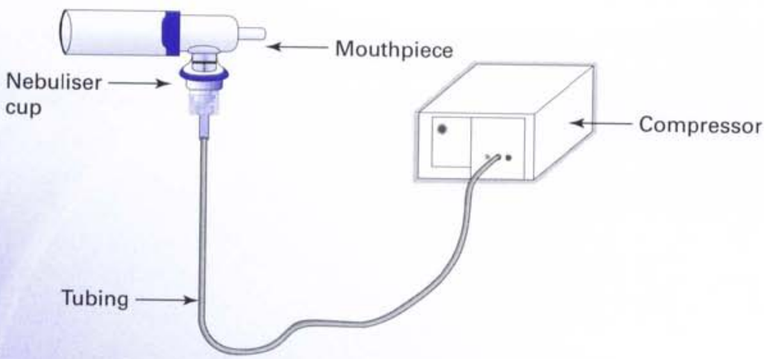


Figure 16. Nebuliser set-up

The procedure

- Consult the prescription chart and check:
  - The identity of the patient.
  - The prescription: validity, drug, dose, diluent, route of administration, date and time of starting.
  - Drug allergies.
- Check the name, dose, and expiry date of the drug on the vial.
- Ask a colleague (registered nurse or doctor) to confirm the name, dose, and expiry date of the drug on the vial.
- Place the air compressor on a sturdy surface and plug it into the mains.

! The compressor unit is most suitable for asthmatic patients and delivers a set airflow rate. However, for COPD patients you must *not* use a compressor unit. Instead, connect the tubing to the oxygen outlet in the wall and set the flow rate to 8 l/min.

- Wash your hands.
- Open the vial of drug solution by twisting off the top.
- With the syringe, carefully draw up the correct amount of drug solution.
- Remove the top part of the nebuliser cup and place the drug solution into it.
- Re-attach the top part of the nebuliser cup and connect the mouthpiece or face mask to the nebuliser cup.
- Connect the tubing from the air compressor to the bottom of the nebuliser cup.
- Switch on the air compressor.
- Ask the patient to sit up straight.
- If using a mouthpiece, ask the patient to clasp it between his teeth and to seal his lips around it. If using a mask, position it comfortably and securely over the patient's face.
- Ask the patient to take slow, deep breaths through the mouth and, if possible, to hold each breath for 2–3 seconds before breathing out.
- Continue until there is no drug left and the nebuliser begins to splutter (about 10 minutes).

! Should the patient feel dizzy, he should interrupt the treatment and rest for about 5 minutes before resuming it. He should then try to breathe more slowly through the mouthpiece.

- Turn the compressor off.
- Ask the patient to take several deep breaths and to cough up any secretions.
- Ask the patient to rinse his mouth with water.
- Wash your hands.

After the procedure

Tell the examiner that you would clean and disinfect the equipment.

Sign the drug chart and record the diluent used, and the date, time, and dose of the drug in the medical records.

Indicate that you would have your checking colleague countersign it.

Ask the patient if he has any questions or concerns.

Ensure that he is comfortable.

GI medicine and urology



Station 27
Abdominal pain history

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to uncover the cause of his abdominal pain, and ask for his consent to do this.

Ensure that he is comfortable.

! **Ensure that the patient is nil by mouth. Acute abdomen is a surgical complaint and the patient must therefore be kept nil by mouth until the need for surgery has been excluded.**

The history

- Name, age, and occupation.

Presenting complaint and history of presenting complaint

- Ask about the nature of the abdominal pain. Use open questions.
- For any pain, try to determine:
  - Nature.
  - Site.
  - Onset.
  - Duration.
  - Radiation.
  - Aggravating and alleviating factors.
  - Associated symptoms and signs.
- In addition ask about:
  - Fever.
  - Loss of weight or anorexia.
  - Dysphagia.
  - Indigestion.
  - Nausea, vomiting, and haematemesis.
  - Diarrhoea or constipation.
  - Melaena or rectal bleeding.
  - Steatorrhoea.
  - Jaundice.

- Genitourinary symptoms: frequency, dysuria, haematuria.
- Menses (menarche, menopause, length of menstrual periods, amount of bleeding, pain, intermenstrual bleeding, last menstrual period).

Past medical history

- Previous episodes of abdominal pain.
- Current, past, and childhood illnesses.
- Surgery.

Drug history

- Prescribed medications. Ask specifically about corticosteroids, NSAIDs, antibiotics, and the contraceptive pill.
- Over-the-counter medication.
- Recreational drugs.
- Allergies.

Family history

- Parents, siblings, and children. Ask specifically about colon cancer, irritable bowel syndrome, inflammatory bowel disease, jaundice, peptic ulcer, and polyps.

Social history

- Alcohol consumption.
- Smoking.
- Travel.
- Employment, past and present.
- Housing.
- Contact with jaundiced patients.

After taking the history

Ask the patient if there is anything that he might add that you have forgotten to ask.

Ask the patient if he has any questions or concerns.

Thank the patient.

State that you would carry out a full abdominal examination and order some key investigations such as urinalysis, serum analysis, and an abdominal X-ray, as appropriate.

Summarise your findings and offer a differential diagnosis.

Table 17. Most common conditions likely to appear in a abdominal pain history station	
Appendicitis	Ureteric colic
Gastro-oesophageal reflux disease	Acute pancreatitis
Peptic ulceration	Diverticulitis
Biliary colic	Colon cancer
Acute cholecystitis	Irritable bowel syndrome

! **Remember that basal pneumonia, diabetic ketoacidosis, and an inferior myocardial infarct can also present as abdominal pain.**

Station 28
Urological history

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to uncover the nature of his urological complaint, and ask for consent to do this.

Ensure that he is comfortable.

The history

- Name, age, and occupation.

Presenting complaint and history of presenting complaint

- Ask about the main presenting complaint. Ask open questions.
- Elicit the patient's ideas, concerns, and expectations.
- Determine the time course of events and the severity of the problem.
- Ask specifically about:
  - Pain: for any pain, ask about site, radiation, intensity, character, onset, duration, relieving and aggravating factors, and associated factors.
  - Fever.
  - Frequency.
  - Urgency.
  - Dysuria.
  - Haematuria.
  - Nocturia.
  - Hesitancy and terminal dribbling (if male).
  - Poor stream.
  - Incontinence.
  - Back pain, leg weakness, weight loss, anorexia.
  - Vaginal/urethral discharge, genital sores.
  - Testicular masses, testicular pain.
  - Sexual dysfunction.
  - Sexual contacts.

Past medical history

- Past urological problems.
- Ask specifically about UTI, renal colic, diabetes mellitus, hypertension, and gout.

- Current, past, and childhood illnesses.
- Surgery.

Drug history

- Prescribed medication.
- Over-the-counter medication.
- Recreational drugs.
- Allergies.

Family history

- Parents, siblings, and children. In particular, has anyone in the family had a similar problem?
- Ask specifically about bladder cancer.

Social history

- Employment.
- Housing.
- Travel.
- Alcohol consumption.
- Smoking.

After taking the history

Ask the patient if there is anything he might add that you have forgotten to ask about.

Thank the patient.

State that you would carry out an abdominal and genital exam and order some key investigations.

Summarise your findings and offer a differential diagnosis.

Table 18. Most common conditions likely to appear in a urological history station

Urinary tract infection	Prostatism
Urinary incontinence	Sexually transmitted disease

Station 29
Abdominal examination

Before starting

Introduce yourself to the patient.

Ask the patient for permission to examine his abdomen.

Say to the examiner that you would normally expose the patient from nipples to knees, but that in this case you are going to limit yourself to exposing the patient to the groins.

Position the patient so that he is lying flat on the couch, with his arms at his side and his head supported by a pillow.

Ensure that the patient is comfortable.

The examination

General inspection

- From the end of the couch, observe the patient's general appearance (age, state of health, nutritional status, and any other obvious signs).
- Inspect the abdomen for its contours and any obvious distension, localised masses, scars, and skin changes. Ask the patient to lift his head to tense the abdominal muscles.

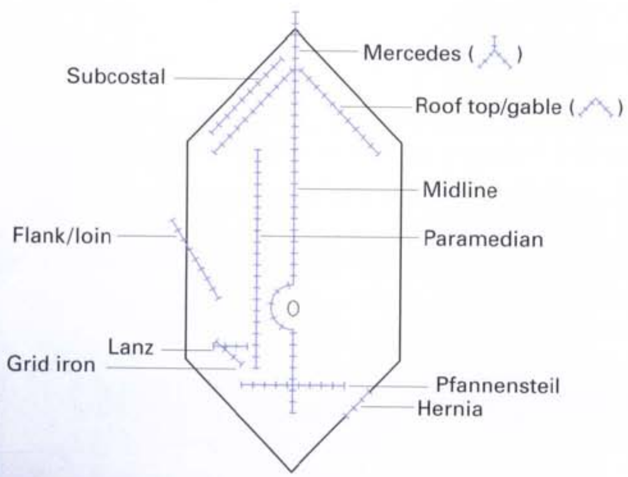


Figure 17. Abdominal scars

Inspection and examination of the hands

- Take both hands, looking for:
  - Clubbing.

- Palmar erythema (liver disease).
- Dupuytren's contracture (cirrhosis).
- Nail signs (leukonychia – hypoalbuminaemia, koilonychia – iron deficiency).

- Test for asterixis or "liver flap" (hepatic failure) by showing the patient how to extend both arms with the wrists dorsiflexed and the palms facing forwards.

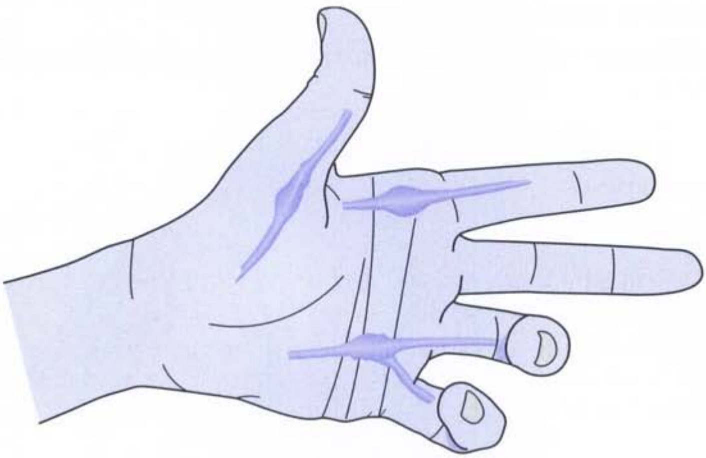


Figure 18. Dupuytren's contracture

Inspection and examination of the head, neck, and upper body

- Inspect the sclera and conjunctivae for signs of jaundice or anaemia.
- Inspect the mouth, looking for ulcers (Crohn's disease), angular stomatitis (nutritional deficiency), atrophic glossitis (iron deficiency, vitamin B12 deficiency, folate deficiency), furring of the tongue (loss of appetite), and the state of the dentition.
- Examine the neck for lymphadenopathy.
- Examine the upper body for gynaecomastia (cirrhosis), caput medusae, and spider naevi (chronic liver disease).

Palpation of the abdomen

! Ask the patient if he has any abdominal pain and fix upon his face as you palpate his abdomen. Palpate with the palmar surface of your fingers whilst sitting or kneeling beside the patient.

- *Light palpation* – Begin by examining the segment furthest away from any pain or discomfort and systematically palpate the four quadrants and the umbilical area. Look for tenderness, guarding, and any masses.
- *Deep palpation* – For greater precision. Describe and localise any masses.

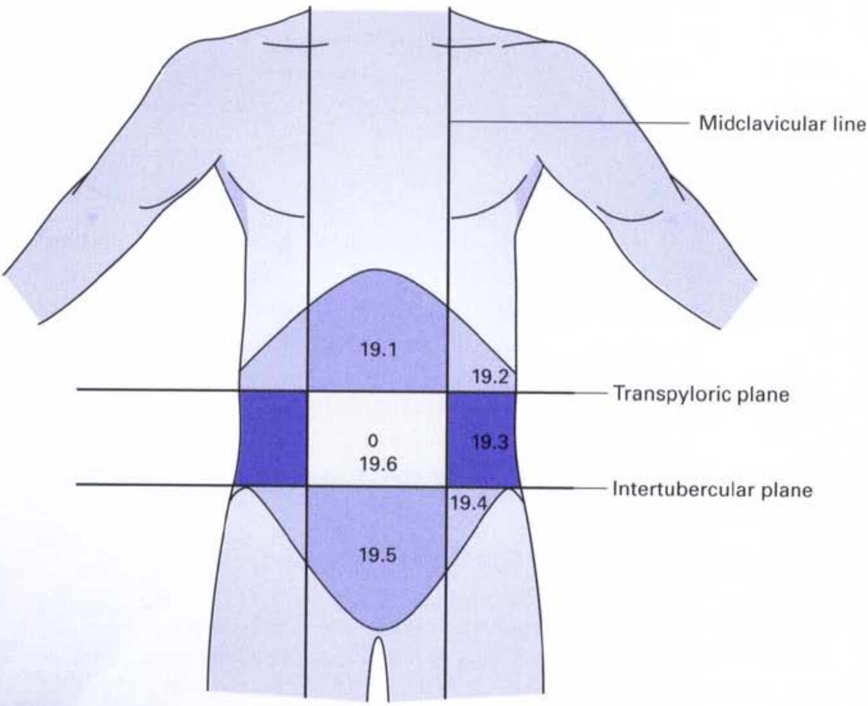


Figure 19. Regions of the abdomen
19.1 Epigastric
19.2 Left hypochondriac
19.3 Right lumbar
19.4 Right iliac fossa
19.5 Suprapubic/hypogastric
19.6 Umbilical

Palpation of the organs

- *Liver* – Ask the patient to breathe in and out and, starting in the *right lower quadrant*, feel for the liver edge using the flat of your hand or the tips of your fingers. The liver edge, if felt, can be described in terms of regularity, nodularity, and tenderness.
- *Gallbladder* – Palpate for tenderness over the gallbladder region that is at the tip of the right ninth rib.
- *Spleen* – Palpate for the spleen as for the liver, again starting in the *right lower quadrant*.
- *Kidneys* – Position the patient close to the edge of the bed and ballot each kidney using the technique of deep bimanual palpation, which some students do find quite tricky.
- *Aorta* – Palpate the descending aorta between the thumb and the index of your right hand at a point midway between the xiphisternum and the umbilicus.

Percussion

- Percuss the liver area, also remembering to detect its upper border (usually found in the fourth intercostal space).
- Percuss the suprapubic area for undue dullness (bladder distension).
- If the abdomen appears distended, test for shifting dullness (ascites). *Shifting dullness can be tested for by percussing down the right side of the abdomen. If an area of dullness is detected, keep two fingers on it and ask the patient to roll over to his left. Re-percuss the area which should now sound tympanic.*

Auscultation

- Auscultate in the mid-abdomen for abdominal sounds. Listen for 30 seconds before concluding that they are normal, hyperactive, hypoactive, or absent.
- Listen over the abdominal aorta for aortic bruits suggestive of arteriosclerosis or an aneurysm.
- Listen for renal artery bruits 2.5 cm above and lateral to the umbilicus – a bruit suggests renal artery stenosis.

Table 19. Principal causes of altered bowel sounds

Hypoactive	Constipation Drugs such as anticholinergics and opiates General anaesthesia Abdominal surgery Paralytic ileus (absent bowel sounds)
Hyperactive	Diarrhoea of any cause Inflammatory bowel disease GI bleeding Mechanical bowel obstruction (high pitched bowel sounds)

! The following are not usually performed in an abdominal examination station, but they should nevertheless be mentioned at this stage.

Examination of the groins and genitals

(See Stations 30 and 32.)

Rectal examination

(See Station 31.)

After the examination

- Cover the patient up.
- Thank the patient.
- Ask the patient if he has any questions or concerns.
- State that you would test the urine and order some key investigations, e.g. ultrasound scan, FBC, LFTs, U&Es, and clotting screen.
- Summarise your findings and offer a differential diagnosis.

Table 20. Most common conditions likely to appear in an abdominal examination station

Chronic liver disease	Renal transplant
Splenomegaly	Scars
Polycystic kidney	Hernias

Station 30
Male genitalia examination

Specifications: You may be asked to examine the male genitalia on a real patient or, more likely, on a pelvic mannequin.

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ask for a chaperone.

Ask him to lie on the couch and expose his groin area.

Ensure that he is comfortable.

! Ensure the patient's comfort and dignity at all times.

The examination

General inspection

- From the end of the couch observe the patient's general appearance. The patient's age can give you an indication of the most likely pathology.
- In particular, note the distribution of facial, axillary, and pubic hair.
- Look for gynaecomastia.

Inspection and examination of the male genitalia

- Warm your hands.
- Ensure that the patient is not in pain.

PENIS

- Inspect the penis for lesions and ulcers.
- Retract the foreskin and examine the *glans penis* and the external urethral meatus. Is there a discharge? Can a discharge be expressed?
    - If there is a discharge, indicate that you would swab it for microscopy and culture.

SCROTUM

- Inspect the scrotum. Are the testicles present? Is their lie normal? If a testicle is absent, is it retracted or undescended? If you find a scar, the absent testicle may have been surgically removed.
- Fix upon the patient's face and palpate:
    - The testis.
    - The epididymis.
    - The *vas deferens*.

- If you locate a mass, try to get above it. If you cannot, it is likely to be a hernia so test for a cough impulse (see Station 32).
- Next, transilluminate the mass using a pen torch. Is it a cyst or a solid mass? If it is a cyst, is it a hydrocoele or an epididymal cyst? If it is a solid mass, is it tender? Is it testicular or epididymal?
- If you suspect a varicocoele, a collection of varicosities in the pampiniform venous plexus, examine the patient in the standing position and test for a cough impulse. **Note that varicocoeles are invariably left-sided.**

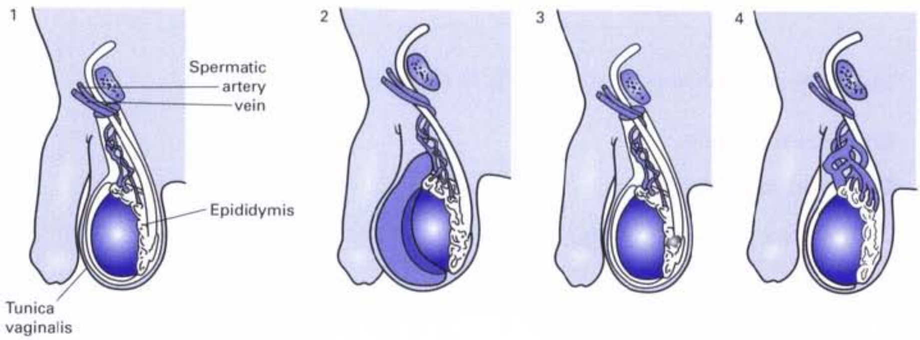


Figure 20. Normal testis and appendages, hydrocoele, epididymal cyst, and varicocoele

Examination of the lymphatics

- Palpate the inguinal nodes in the inguinal crease. Remember that only the penis and scrotum drain to the inguinal nodes, as the testicles drain to the para-aortic lymph nodes.

After the examination

Cover up the patient.

Thank the patient.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 21. Most common conditions likely to appear in an examination of the male genitalia station

Hydrocoele	Direct inguinal hernia (see Station 32)
Epididymal cyst	Penile ulcer(s)
Varicocoele	

Station 31
Rectal examination

Specifications: A plastic model in lieu of a patient.

Before starting

Introduce yourself to the patient.

Explain the procedure to him, emphasising that it might be uncomfortable but that it should not be painful, and ask for his consent to carry it out.

Ask for a chaperone.

Ask the patient to lower his trousers and underpants.

Ask him to lie on his left side, to bring his buttocks to the side of the couch, and to bring his knees up to his chest.

The examination

- Put on a pair of gloves.
- Gently separate the buttocks and inspect the anus and surrounding skin. In particular, look out for skin tags, excoriations, ulcers, fissures, prolapsed haemorrhoids, and mucosal prolapse.
- Lubricate the index finger of your right hand.
- Position the finger over the anus, as if pointing to the genitalia.
- Gently insert the finger into the anus, through the anal canal, and into the rectum (Figure 21).

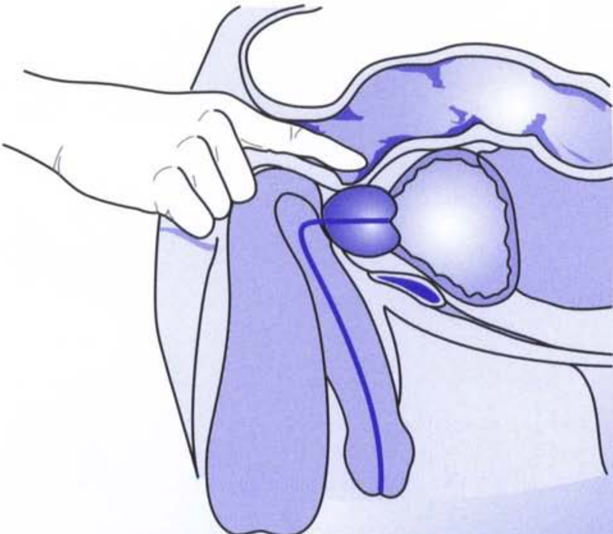


Figure 21. Digital rectal examination

- Test anal tone by asking the patient to squeeze your finger.
- Rotate the finger so as to palpate the entire circumference of the anal canal and rectum. Feel for any masses, ulcers, or induration.
  - In males pay specific attention to the size, surface, and consistency of the prostate gland.
  - In females, the cervix is usually palpable.
- Remove the finger and examine the glove. In particular look at the colour of any stool, and for the presence of any mucous or blood.
- Remove and dispose of the gloves.

After the examination

Clean off any lubricant or faeces on the anus or anal margin.

Give the patient time to put his clothes back on.

Ensure that he is comfortable.

Address any questions or concerns that he may have.

Present your findings to the examiner, and offer a differential diagnosis.

Station 32
Hernia examination

Inguinal anatomy

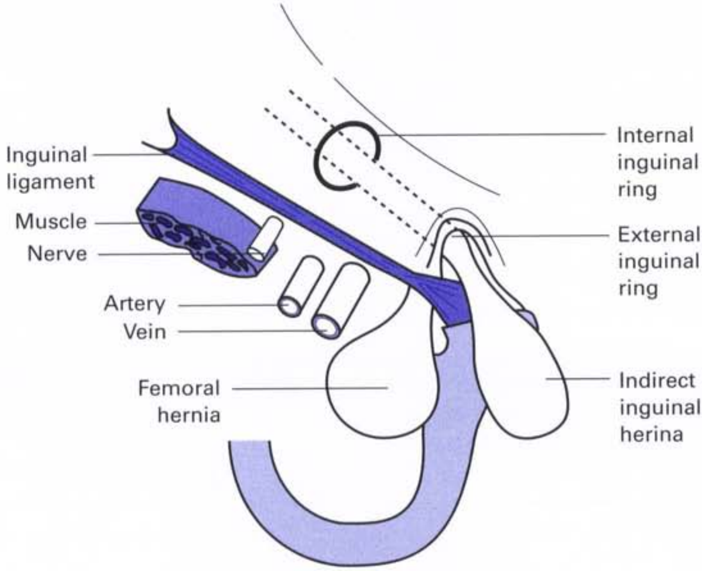


Figure 22. The inguinal canal runs along the inguinal ligament, from the internal (deep) ring to the external (superficial) ring. The inguinal ligament stretches from the anterior superior iliac spine to the pubic tubercle. The internal ring lies approximately 1.5 cm superior to the femoral pulse, itself in the midline of the inguinal ligament. The external ring lies immediately superior and medial to the pubic tubercle

Definition of a hernia

A hernia is defined as the protrusion of an organ or part thereof through a deficiency in the wall of the cavity in which it is contained. There are many different types of hernia but the ones that are most likely to be examined and discussed in an OSCE are indirect and direct inguinal hernias and femoral hernias. Their principal differentiating features are summarised in Table 22. The differential diagnosis of a lump in the groin is listed in Table 23.

Table 22. Principal differentiating features of indirect and direct inguinal hernias and femoral hernias

Indirect hernia	Direct hernia	Femoral hernia
Neck of hernia is superior to the inguinal ligament/ pubic tubercle and lateral to the inferior epigastric vessels	Neck of hernia is superior to the inguinal ligament/ pubic tubercle and medial to the inferior epigastric vessels	Neck of hernia is inferior and lateral to the inguinal ligament/ pubic tubercle
Accounts for 80% of inguinal hernias	Accounts for 20% of inguinal hernias	Is more common in females
Irreducible	Easily reducible	Often irreducible
Can strangulate	Rarely strangulates	Frequently strangulates

Table 23. Differential diagnosis of a lump in the groin

Superior to the inguinal ligament	Inferior to the inguinal ligament
Indirect or direct inguinal hernia	Femoral hernia
Incisional hernia	Lymph node
Sebaceous cyst	Sebaceous cyst
Lipoma	Lipoma
Undescended testis	Saphena varix
	Femoral artery aneurysm
	Psoas abscess (rare)
	Undescended testis
	Scrotal mass (see Station 30)

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ask for a chaperone.

Ask the patient to lie on the couch and to expose his abdomen from the umbilicus to the knees.

Ensure that he is comfortable.

Warm up your hands.

! Ensure the patient's dignity at all times.

The examination

Inspection and palpation

- Inspect the groins (both sides!) for an obvious lump. If a lump is visible, determine its location in relation to its surrounding anatomical landmarks. Also determine its size, shape, colour, consistency, and mobility. Is it tender to touch? Can it be transilluminated? (See *Station 14: Examination of a superficial mass.*)
- Look for old surgical scars (incisional hernia).
- Ask the patient to stand up and look again.

Cough impulse and cough tests

(The patient is still standing.)

- Ask the patient to cough and look again.
- Test the lump for a cough impulse. Place two fingers over the lump and ask the patient to cough once more.
- If you are satisfied that the lump is an inguinal hernia, ask the patient to reduce the lump. Once the lump is fully reduced, place two fingers over the internal ring and ask the patient to cough.
  - If the lump does not reappear it is an indirect inguinal hernia. Release your fingers and ask the patient to cough again.
  - If the lump reappears medially it is a direct inguinal hernia.
- Once again ask the patient to reduce the lump. This time place two fingers over the *external* ring and ask the patient to cough.
  - If the lump does not reappear it is a direct inguinal hernia. Release your fingers and ask the patient to cough again.
  - If the lump reappears laterally it is an indirect inguinal hernia.

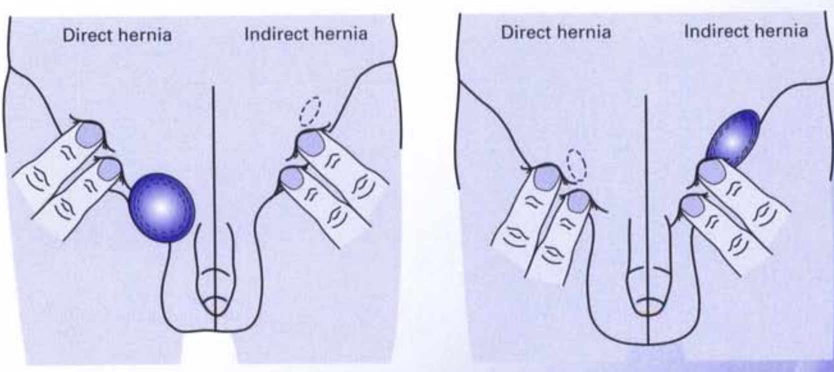


Figure 23. The cough test with two fingers over the internal ring (A) and then over the external ring (B)

After the examination

Indicate that you would also examine the femoral pulses, inguinal lymph nodes, and scrotum.

Cover up the patient.

Ensure that he is comfortable.

Thank him.

Summarise your findings and offer a differential diagnosis. Don't fret over your diagnosis as even experienced surgeons are notoriously poor at differentiating between indirect and direct inguinal hernias.

Wash your hands.

Station 33
Abdominal X-ray interpretation

A systematic approach to interpreting X-rays not only fills out time and impresses the examiner, but also minimises your chances of missing any abnormalities. Before saying anything, it is an excellent idea to spend one minute looking at the X-ray, rubbing your chin, and organising your thoughts.



Figure 24. Normal adult supine PA abdominal X-ray

1. The X-ray

- Name, age, and sex of the patient.
- Date of the X-ray.
- Confirm size of area covered.
- PA or AP? (They are usually PA.)
- Supine (usual), erect, or lateral decubitus? (Look at gastric air bubble and fluid levels.)
- Penetration (lumbar vertebrae should be visible).

2. Interventions or artefacts

- Make a note of any clearly visible interventions or artefacts (Table 24).

Table 24. Abdominal X-ray: interventions and artefacts	
Interventions	Surgical clips, retained surgical instruments or swabs, nasogastric tube, CVP line, intrauterine contraceptive device, renal or biliary stents, endoluminal aortic stent, inferior vena caval filter
Artefacts/other	Pyjama bottoms, coins in pockets, body piercings, bullets, drugs ("bodypackers"), even, unfortunately, small animals

3. Skeleton

Inspect the:

- Lower rib cage.
- Lumbar vertebrae.
- Sacrum and sacroiliac joints.
- Pelvis.
- Hip joints and femora.

4. Organs

Inspect the:

- Liver.
- Spleen: usually not visualised.
- Kidneys: about three vertebrae in size, the left kidney is higher than the right.
- Bladder: not visualised if empty.
- Prostate: only visualised if calcified.
- Stomach.
- Small bowel.
- Large bowel.

! **Large bowel usually frames a central area containing small bowel loops, not all of which are likely to be visible on an X-ray. If need be, large bowel and small bowel can be distinguished by their different mucosal markings: large bowel has haustra that cross only part of the bowel wall whereas small bowel has valvulae that cross its full width.**

5. Gas, fluid levels, and faecal matter

- Gas: depending on its amount and distribution, intraluminal gas may be normal, but intramural or extraluminal gas should be considered abnormal. The small bowel should not be greater than 3 cm in diameter, the colon 5 cm in diameter, and the caecum 9 cm in diameter. Look for gas under the diaphragm

(pneumoperitoneum), even though this is best visualised on an erect chest X-ray.

- Fluid levels: a fluid level in the stomach and caecum is a normal finding, but multiple fluid levels in the colon should be considered abnormal.
- Faecal matter: the amount and distribution of faecal matter can be revealing of underlying pathology.

6. Abnormal calcification

- Calculi (kidneys, ureters, bladder, gall bladder, and biliary tree).
- Pancreas.
- Kidneys.
- Abdominal aorta and arteries.
- Costal cartilages, although note that calcification of the costal cartilages is a benign finding in the older age population.

7. Summarise your findings.

Table 25. Most common conditions likely to appear in an abdominal X-ray interpretation station
Faecal impaction or overload
Obstruction (mass, stricture, volvulus, intussusception)
Ileus
Perforation
Biliary, renal, ureteric, or bladder calculi
Appendicolith
Artefacts (see Table 24)

! Learn their signs, especially the barn-door ones such as apple-core and bird's beak.

Station 34
Nasogastric intubation

Specifications: A mannequin in lieu of a patient.

Choice of NG tube

Nasogastric (NG or Ryle's) tubes can be used for feeding or drug administration, to decompress the stomach, to obtain a sample of gastric fluid, or to drain the stomach's contents (e.g. after an overdose or if emergency surgery is required). If the tube is being used for aspiration or drainage, a gauge of 10 or greater is required. If not, a fine bore tube should be preferred.

The equipment

- A pair of non-sterile gloves.
- An NG tube of appropriate size.
- K-Y jelly.
- Xylocaine spray.
- A glass of water (if appropriate).
- Tape.
- Stethoscope.
- A 20 ml syringe and some pH paper.
- A spigot or catheter bag.
- A vomit bowl.

Before starting

Introduce yourself to the patient.

Explain the need for an NG tube and the procedure for inserting it, and ensure consent.

Position the patient upright and ask about nostril preference/examine the nostrils.

Ensure that the patient is comfortable.

Wash your hands and don the gloves.

The procedure

- Measure the length of NG tube to be inserted by placing the tip of the tube at the nostril and extending the tube behind the ear and then to two fingerbreadths above the umbilicus.
- Lubricate the tip of the NG tube with K-Y jelly.
- Spray the back of the throat with xylocaine or state that you would do so.
- Insert the NG tube into the preferred nostril and slide it along the floor of the nose into the nasopharynx.
- Ask the patient to swallow some water as you continue to advance the tube through the pharynx and oesophagus and into the stomach.
- If the patient coughs or gags, slightly withdraw the tube and leave him some time to recover.
- Insert the tube to the required length.

- Ensure that the tip of the tube is in the stomach.
  - Inject 20 ml of air into the tube and listen over the epigastrium with your stethoscope.
  - Pull back on the plunger to aspirate stomach contents. Test the aspirate with pH paper to confirm its acidity (pH < 6). If a fine-bore tube has been inserted, it may not be possible to aspirate stomach contents.
  - Request a chest X-ray or indicate that you would do so.
- Tape the tube to the nose and to the side of the face.
- Attach a spigot or catheter bag to the NG tube.

After the procedure

Ask the patient if he has any questions or concerns.

Ensure that he is comfortable.

Thank him.

NB: The main complications of NG tube insertion are aspiration and tissue trauma.

Neurology

Station 35
History of headaches

I'm very brave generally, he went on in a low voice: only today I happen to have a headache.

Lewis Carroll, *Through the Looking Glass*

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to uncover the nature of his headaches, and ask for his consent to do this.

Ensure that he is comfortable.

The history

- Name, age, and occupation.

Presenting complaint and history and presenting complaint

First use open questions to get the patient's history, and elicit his ideas, concerns, and expectations.

Then ask specifically about:

- **S**ite.
- **O**nset.
- **C**haracter.
- **R**adiation.
- **A**ssociated factors.
  - Nausea and vomiting.
  - Visual disturbances (aura, double vision, fortification spectra).
  - Photophobia.
  - Fever, chills.
  - Weight loss.
  - Rash.
  - Tender temporal arteries.
  - Neck pain, stiffness.
  - Myalgia.
  - Rhinorrhoea, lacrimation.
  - Altered level of consciousness.
  - Neurological deficit.

- **T**iming.
- **E**xacerbating and relieving factors (activity, caffeine, alcohol, dehydration, stress, eye strain, coughing/sneezing, bright lights, menses, hunger, certain foods).
- **S**everity (effect on the patient's life).

SOCRATES (470-399BC)

Being asked whether it is better to marry or not, he (Socrates) replied, "Whichever you do you will repent it."

Diogenes (412-323BC), Ancient Greek Philosopher and founder of Cynicism

Past medical history

- Current, past, and childhood illnesses.
- Ask specifically about headache, migraine, intracranial lesions, and travel sickness as a child.
- Surgery.

Drug history

- Prescribed medication. Ask specifically about withdrawal from NSAIDs, opioids, glyceryl trinitrate, and calcium channel blockers.
- Over-the-counter medication.
- Recreational drugs.
- Allergies.

Social history

- Employment, past and present.
- Housing.
- Mood. Depression is a common cause of headaches.
- Smoking.
- Alcohol use. Alcohol is a common cause of headaches.

Family history

- Parents, siblings, and children.
- Ask about migraine and travel sickness.

After taking the history

Ask the patient if there is anything he might like to add that you have forgotten to ask about.

Ask him if he has any questions or concerns.

Thank him.

Summarise your findings and offer a differential diagnosis.

State that you would like to carry out a physical examination and some investigations to confirm your diagnosis and exclude life-threatening causes of headaches (see Table 26).

Table 26. Most common conditions likely to appear in a headaches history station
Tension headaches
Cluster headaches
Migraines
Cranial arteritis
Cervical spondylosis
Intracranial mass lesions, e.g. tumour
Meningeal irritation
Subarachnoid haemorrhage

Station 36
History of "funny turns"

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to uncover the cause of his collapse, and ask for his consent to do this.

Ensure that he is comfortable.

The history

- Name, age, and occupation.

Presenting complaint and history of presenting complaint

First use open questions to get the patient's story, and elicit their ideas, concerns and expectations.

Think about the common causes of a funny turn, as these should inform your line of questioning.

Table 27. Most common conditions likely to appear in a history of "funny turns" station
Syncope (simple faint)
Seizure/pseudoseizure
Transient ischaemic attack
Arrhythmia
Postural hypotension (drugs, dehydration, autonomic dysfunction...)
Carotid sinus syndrome
Hypoglycaemia
Vertebrobasilar insufficiency

Ask about:

- If the patient remembers falling.
- The circumstances of the fall.
  - Had the patient just arisen from bed? (postural hypotension)
  - Did the patient suffer an intense emotion? (syncope)
  - Had the patient been coughing or straining? (syncope)
  - Had the patient been extending his neck? (vertebrobasilar insufficiency)
  - Did the patient have any palpitations? (arrhythmia)
- Any loss of consciousness and its duration.
- Prodromal symptoms such as aura, change in mood, strange feeling in the gut, sensation of *déjà vu*.

- Fitting, frothing at the mouth, tongue biting, incontinence.
- Headache or confusion upon recovery.
- Injuries sustained.
- Previous episodes.

Past medical history

- Current, past, and childhood illnesses. Ask specifically about epilepsy, heart problems, stroke, diabetes (autonomic neuropathy), cervical spondylosis, and arthritis.
- Surgery.

Drug history

- Prescribed medication. Drugs such as antipsychotics, tricyclic antidepressants, and antihypertensives can cause postural hypotension. Insulin can cause hypoglycaemia.
- Over-the-counter medication.
- Recreational drugs.
- Recent changes in medication.

Family history

- Parents, siblings, and children.
- Ask specifically about epilepsy and heart problems.

Social history

- Smoking.
- Alcohol use.
- Employment, past and present.
- Housing.
- Effect of falls on patient's life.

After taking the history

Ask the patient if there is anything he might add that you have forgotten to ask about.

Ask him if he has any questions or concerns.

Thank him.

Summarise your findings and offer a differential diagnosis.

State that you would like to carry out a physical examination and some investigations to confirm your diagnosis.

Station 37
Cranial nerve examination

Specifications: You may be asked to limit your examination to certain cranial nerves only, e.g. VII–XII.

Before starting

- Introduce yourself to the patient.
- Explain the examination and ask for his consent to carry it out.
- Ensure that he is comfortable.

The examination

The olfactory nerve (CN I)

- Ask the patient if he has noticed a change in his sense of smell or taste. If he has, indicate that you would perform an olfactory examination by asking the patient to smell different scents, e.g. mint or coffee.

The optic nerve (CN II)

(See *Station 54: Vision and the eye* for more details.)

- Test visual acuity on a Snellen chart.
- Test near vision by asking the patient to read test types (or a page in a book).
- Indicate that you would use Ishihara plates to test colour vision.
- Test the visual fields by confrontation.
- Examine the eyes by direct fundoscopy.

The oculomotor, trochlear, and abducens nerves (CN III, IV, and VI)

(See *Station 54: Vision and the eye* for more details.)

- Inspect the eyes, paying particular attention to the size and symmetry of the pupils, and excluding a visible ptosis (Horner's syndrome) or squint.
- Test the direct and consensual pupillary light reflexes. Explain that you are going to shine a bright light into the patient's eye and that this may feel uncomfortable.
- Perform the cover test. Ask the patient to fixate on a point and cover one eye. Observe the movement of the uncovered eye. Repeat the test for the other eye.
- Examine eye movements. Ask the patient to keep his head still and to follow your finger with his eyes, and to tell you if he sees double at any point. Look out for nystagmus at the extremes of gaze.
- Test the accommodation reflex. Ask the patient to follow your finger in to his nose.

The trigeminal nerve (CN V)

SENSORY PART

- Test light touch in the three branches of the trigeminal nerve. Compare both sides.
- Indicate that you could test the corneal reflex, but that this is likely to cause the patient some discomfort.

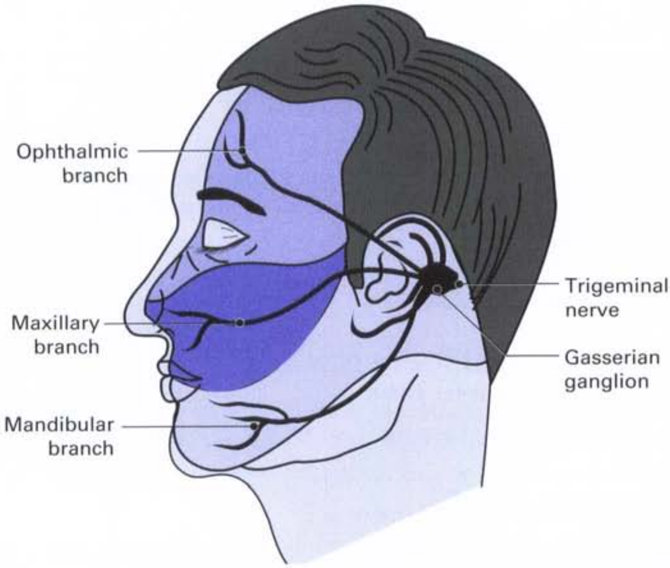


Figure 25. The three branches of the trigeminal nerve

MOTOR PART

- Test the muscles of mastication (the temporalis, masseter, and pterygoid muscles) by asking the patient to:
  - Clench his teeth (palpate his temporalis and masseter muscles bilaterally).
  - Open and close his mouth against resistance (place your fist under his chin).
- Indicate that you would test the jaw jerk. Ask the patient to let his mouth fall open slightly. Place your fingers on his chin and tap them lightly with a tendon hammer.

The facial nerve (CN VII)

- Look for facial asymmetry. Note that the nasolabial folds and the angle of the mouth are especially indicative of facial asymmetry.

SENSORY PART

- Indicate that you would test the anterior two-thirds of the tongue for sensation.

MOTOR PART

- Test the muscles of facial expression by asking the patient to:
  - Lift his eyebrows as far as they will go.
  - Close his eyes as tightly as possible. (Try to open them.)
  - Blow out his cheeks.
  - Purse his lips or whistle.
  - Show his teeth.

The acoustic nerve (CN VIII)

(See *Station 53: Hearing and the ear* for more details.)

- Test hearing sensitivity in each ear by occluding one ear and rubbing your thumb and fingers together in front of the other. Pretend that you are in private practice and asking for your fee.
- Indicate that you could carry out the Rinne and Weber tests and examine the ears by auroscopy (see Station 53).

The glossopharyngeal nerve (CN IX)

- Indicate that you could test the gag reflex by touching the tonsillar fossae on both sides, but that this is likely to cause the patient some discomfort.

The vagus nerve (CN X)

- Ask the patient to phonate (say "aaah") and, aided by a pen torch, look for deviation of the uvula.

The hypoglossal nerve (CN XII)

- Aided by a pen torch, inspect the tongue for wasting and fasciculation.
- Ask the patient to stick out his tongue and to wiggle it from side to side.

The accessory nerve (CN XI)

- Look for wasting of the sternocleidomastoid and trapezius muscles.
- Ask the patient to:
  - Shrug his shoulders against resistance.
  - Turn his head to either side against resistance.

After the examination

Thank the patient.

Ensure that he is comfortable.

If appropriate, state that you would order some key investigations, e.g. a CT or MRI.

Summarise your findings and offer a differential diagnosis.

Table 28. Most common conditions likely to appear or to be asked about in a cranial nerves examination station
Third nerve palsy
Bell's palsy
Horner's syndrome
Cavernous sinus lesions
Cerebellopontine angle tumour
Bulbar palsy
Pseudo-bulbar palsy
Brain-stem infarction
Multiple sclerosis
Motor neurone disease
Myasthenia gravis

Station 38
Motor system of the upper limbs examination

Before starting

Introduce yourself to the patient.
Explain the examination and ask for his permission to carry it out.
Position him and ask him to expose his arms.
Ask if he is currently experiencing any pain.

The examination

Inspection

- Look for abnormal posturing.
- Look for abnormal movements such as tremor, fasciculation, dystonia, athetosis.
- Assess the muscles of the hands, arms, and shoulder girdle for size, shape, and symmetry. You can also measure the circumference of the arms.

Tone

- Ensure that the patient is not in any pain.
- Test the tone in the upper limbs by holding the patient's hand and simultaneously pronating and supinating and flexing and extending the forearm. If you suspect increased tone, ask the patient to clench his teeth and re-test. Is the increased tone best described as spasticity (clasp-knife) or as rigidity (lead pipe)? Spasticity suggests a pyramidal lesion, rigidity suggests an extra-pyramidal lesion.

Power

- Test muscle strength for shoulder abduction, elbow flexion and extension, wrist flexion and extension, finger flexion, extension, abduction and adduction, and thumb abduction and opposition. Compare muscle strength on both sides, and grade it on the MRC muscle strength scale:

  0 No movement.

  1 Feeble contractions.

  2 Movement, but not against gravity.

  3 Movement against gravity, but not against resistance.

  4 Movement against resistance, but not to full strength.

  5 Full strength.

Table 29. Important root values in the upper limb – muscle strength	
Shoulder abduction	C5
Elbow flexion	C6
Elbow extension	C7
Wrist extension	C6, C7
Wrist flexion	C7, C8
Finger extension	C7 (radial nerve)
Finger flexion	C8
Finger abduction/adduction	T1 (ulnar nerve)
Thumb abduction/opposition	T1 (median nerve)

Reflexes

- Test biceps, supinator, and triceps reflexes with a tendon hammer. Compare both sides. If a reflex cannot be elicited, ask the patient to clench his teeth and re-test (reinforcement).

Table 30. Important root values in the upper limb – reflexes	
Biceps	C5, C6
Supinator	C6
Triceps	C7

Cerebellar signs

- Test for intention tremor, dysynergia, and dysmetria by asking the patient to carry out the finger-to-nose test.
  - Place your index finger at about two feet from the patient's face. Ask him to touch the tip of his nose and then the tip of your finger with the tip of his index finger. Once he is able to do this, ask him to do it as fast as he can. And remember that he has two hands!
- Then test for dysdiadochokinesis.
  - Ask the patient to clap and then show him how to clap by alternating the palmar and dorsal surfaces of one hand. Once he is able to do this, ask him to do it as fast as he can. Ask him to repeat the test with his other hand.

After the examination

Thank the patient.

Ensure that he is comfortable.

Ask to carry out a full neurological examination.

If appropriate, indicate that you would order some key investigations, e.g. CT, MRI, nerve conduction studies, electromyography etc.

Summarise your findings and offer a differential diagnosis.

Table 31. Most common conditions likely to appear in an upper limbs motor examination station
Parkinson's disease
Cerebellar syndrome
Ulnar, median, or radial nerve lesion
Radiculopathy
Myopathy
Hemiplegia

Station 39
Sensory system of the upper limbs examination

Before starting

- Introduce yourself to the patient.
- Explain the examination and ask for his permission to carry it out.
- Position him so that he is comfortably seated and ask him to expose his arms.
- Ask if he is currently experiencing any pain.

The examination

To examine the sensory system, test light touch, pain, vibration sense, and proprioception.

! Do not forget to inspect the arms before you start.

- Light touch (*not* light rub). Ask the patient to close his eyes and apply a wisp of cotton wool to the sternum and then to each of the dermatomes of the arm. Do not forget to compare both sides as you go along.

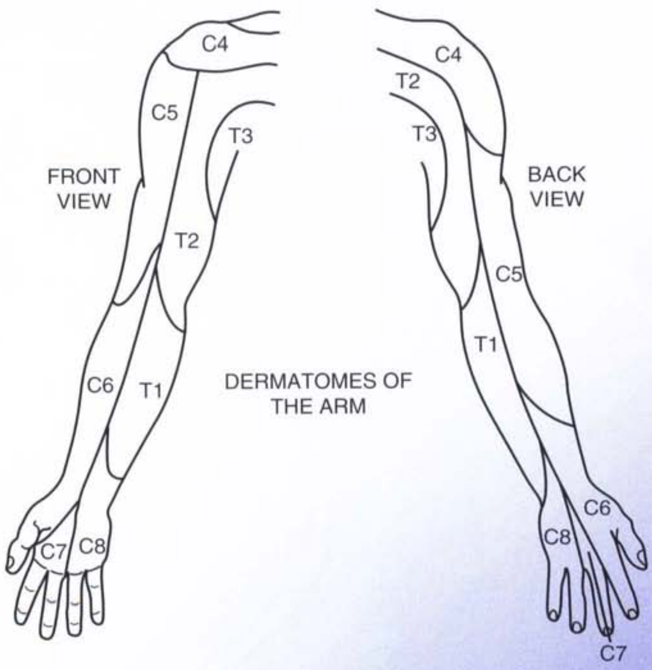


Figure 26. Dermatomes of the arm

- Pain. Ask the patient to close his eyes and apply a sharp object – ideally a neurological pin – to the sternum and then to each of the dermatomes of the arm. Compare both sides as you go along.
- Vibration. Ask the patient to close his eyes and apply a vibrating 128 Hz or 256 Hz tuning fork (not the smaller 512 Hz tuning fork used in hearing tests) to the sternum and then over the bony prominences of the upper arm. Compare both sides as you go along.
- Proprioception. Ask the patient to close his eyes. Hold one of his fingers by its sides and move it at the distal interphalangeal joint, asking him to identify the direction of each movement. Before you do this, do ensure that the patient does not suffer from arthritis or from some other painful condition of the hand.

After the examination

- Thank the patient.
- Ensure that he is comfortable.
- Ask to carry out a full neurological examination.
- Summarise your findings and offer a differential diagnosis.

Table 32. Most common conditions likely to appear in an upper limbs sensory examination station
Radiculopathy, affecting a single nerve root, e.g. C6
Mononeuropathy, affecting a single nerve, e.g. ulnar nerve
Polyneuropathy, affecting multiple nerves as in diabetic neuropathy
Cortical lesions, e.g. Brown–Séquard syndrome

Station 40
Motor system of the lower limbs examination

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his permission to carry it out.

Position him and ask him to expose his legs.

Ask if he is currently experiencing any pain.

The examination

Inspection

- Look for deformities of the foot.
- Look for abnormal posturing.
- Look for fasciculation.
- Assess the muscles of the legs for size, shape, and symmetry. You can also measure the circumference of the quadriceps or calves.

Tone

- Ensure that the patient is not in any pain.
- Test the tone in the legs by rolling the leg on the bed, by flexing and extending the knee, or by abruptly lifting the leg at the knee.

Power

- Test muscle strength for hip flexion, extension, abduction and adduction, knee flexion and extension, plantar flexion and dorsiflexion of the foot and big toe, and inversion and eversion of the forefoot. Compare muscles strength on both sides, and grade it on the MRC muscle strength scale:

  0 No movement.

  1 Feeble contractions.

  2 Movement, but not against gravity.

  3 Movement against gravity, but not against resistance.

  4 Movement against resistance, but not to full strength.

  5 Full strength.

Table 33. Important root values in the lower limb – muscle strength	
Hip flexion	L1, L2
Hip extension	S1
Hip adduction	L2
Knee flexion	L5, S1
Knee extension	L3, L4
Foot dorsiflexion	L4, L5
Foot plantar flexion	S1
Big toe dorsiflexion	L5

Reflexes

- Test the knee jerk and ankle jerk with a tendon hammer. Compare both sides. If a reflex cannot be elicited, ask the patient to clench his teeth and re-test (reinforcement).

Table 34. Important root values in the lower limb – reflexes	
Knee jerk	L3, L4
Ankle jerk	S1

- Test for clonus by holding up the ankle and rapidly dorsiflexing the foot.
- Test for the Babinsky sign (extensor plantar reflex) using the sharp end of a tendon hammer or an orange stick. The sign is positive if there is extension of the big toe at the MTP joint, so-called "upgoing plantars".

Cerebellar signs

- Carry out the heel-to-shin test.
  - Lie the patient on a couch. Ask him to run the heel of one leg down the shin of the other, and then to bring the heel back up to the knee and to start again. Ask him to repeat the test with his other leg.

Gait

- If he can, ask the patient to walk to the end of the room and to turn around and walk back. (See *Station 42: Gait and co-ordination examination.*)

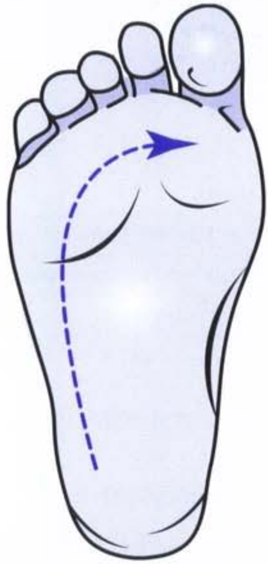


Figure 27. Testing for the Babinsky sign

After the examination

- Thank the patient.
- Ensure that he is comfortable.
- Ask to carry out a full neurological examination.
- If appropriate, indicate that you would order some key investigations, e.g. CT, MRI, nerve conduction studies, electromyography, etc.
- Summarise your findings and offer a differential diagnosis.

Table 35. Most common conditions likely to appear in a lower limbs motor examination station
Radiculopathy
Polyneuropathy
Cauda equina lesion
Hemiplegia
Myopathy
Foot drop

Station 41
Sensory system of the lower limbs examination

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his permission to carry it out.

Position him on a couch and ask him to expose his legs.

Ask if he is currently experiencing any pain.

The examination

To examine the sensory system, test light touch, pain, vibration sense, and proprioception.

Do not forget to inspect the legs before you start.

- Light touch (*not* light rub): Ask the patient to close his eyes and apply a wisp of cotton wool to the sternum and then to each of the dermatomes of the leg. Do not forget to compare both sides as you go along.

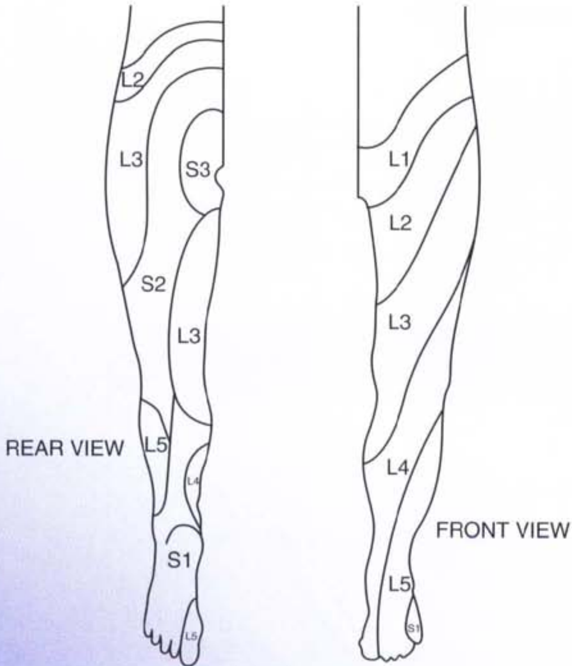


Figure 28. Dermatomes of the leg

- Pain. Ask the patient to close his eyes and apply a sharp object – ideally a neurological pin – to the sternum and then to each of the dermatomes of the leg. Compare both sides as you go along.
- Vibration. Ask the patient to close his eyes and apply a vibrating 128 Hz or 256 Hz tuning fork (not the smaller 512 Hz tuning fork used in hearing tests) to the sternum and then over the bony prominences of the leg. Compare both sides as you go along.
- Proprioception. Ask the patient to close his eyes. Hold one of his toes by its sides and move it at the interphalangeal joint, asking him to identify the direction of each movement. Before you do this, ensure that the patient does not suffer from arthritis, gout, or some other painful condition of the foot. If the patient is able to stand, you can also perform Romberg's test (see *Station 42: Gait and co-ordination examination*.)

After the examination

Thank the patient.

Ensure that he is comfortable.

Ask to carry out a full neurological examination.

If appropriate, indicate that you would order some key investigations, e.g. CT, MRI, nerve conduction studies, electromyography, etc.

Summarise your findings and offer a differential diagnosis.

Table 36. Most common conditions likely to appear in an upper limbs sensory examination station
Radiculopathy
Mononeuropathy
Polyneuropathy
Cauda equina lesion
Cortical lesion

Station 42
Gait and co-ordination examination (and cerebellar function)

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ask if he is currently experiencing any pain.

Examination of gait

- Inspection. Ask the patient to stand up. Ensure that he is steady on his feet and inspect his posture from both front and side. Truncal ataxia suggests a midline cerebellar lesion.
- Gait and arm swing. Ask him to walk to the end of the room and to turn around and walk back. If he normally uses a stick or frame, he should not be prevented from doing so.
- Heel-to-toe test. Ask him to walk heel-to-toe, "as if on a tightrope". Ataxia on a narrow-based gait suggests a cerebellar or vestibular lesion.
- Romberg's test. Ask him to stand unaided with his arms by his sides and with his eyes closed. If he sways and threatens to lose his balance, the test is said to be positive, indicating posterior column disease.

! **You must be in a position to steady the patient should he threaten to fall.**

Examination of co-ordination

- Resting tremor. Ask the patient to rest his hands in his lap and to close his eyes. Resting tremor is a sign of Parkinson's disease.
- Intention tremor. Ask the patient to do something, e.g. remove his watch or write a sentence.
- Examine muscle tone in the elbow (flexion and extension) and wrist (flexion and extension, abduction and adduction) joints. Compare both sides.
- Dysdiadochokinesis. Ask the patient to clap and then show him how to clap by alternating the palmar and dorsal surfaces of one hand. Once he is able to do this, ask him to do it as fast as he can. Ask him to repeat the test with his other hand.
- Finger-to-nose test. Place your index finger at about 2 feet from the patient's face. Ask him to touch the tip of his nose and then the tip of your finger with the tip of his index finger. Once he is able to do this, ask him to do it as fast as he can. And remember that he has two hands! Look for intention tremor and dysmetria (past-pointing), both signs of cerebellar disease.

- Fine finger movements. Ask the patient to oppose his thumb with each of his other fingers in turn. Once he is able to do this, ask him to do it as fast as he can. Again, remember that he has two hands.
- Heel-to-shin test. Lie the patient on a couch. Ask him to run the heel of one leg down the shin of the other, and then to bring the heel back up to the knee and to start again. Ask him to repeat the test with his other leg.

After the examination

Ask the patient if he has any questions or concerns.

Thank the patient.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 37. Most common conditions likely to appear in a gait and co-ordination station
Parkinson's disease
Cerebellar ataxia
Multiple sclerosis
Sensory ataxia
Hemiplegia
Musculoskeletal disease
Senile gait

Assessment of cerebellar function

If you are specifically asked to assess cerebellar function, carry out the above plus test eye movements (nystagmus) and ask the patient to say "baby hippopotamus" (slurred/staccato speech). If you are then asked to list cerebellar signs, simply remember the acronym DANISH:

Dysdiadochokinesis and dysmetria (finger overshoot).

Ataxia.

Nystagmus – test eye movements.

Intention tremor.

Slurred/staccato speech – ask the patient to say "baby hippopotamus".

Hypotonia/hyporeflexia.

Station 43
Speech assessment

The patient is likely to find the assessment difficult and distressing, so remember to be especially empathetic. In particular, do not rush the examination or keep on interrupting the patient, but move at a pace that feels comfortable for him.

Definitions

Dysphonia	Impairment of ability to vocalise speech.
Dysarthria	Impairment of ability to articulate speech.
Dysphasia	Impairment of ability to comprehend or express language.

Expressive dysphasia (Broca's area, in the inferolateral dominant frontal lobe) and receptive dysphasia (Wernicke's area, in the posterior superior dominant temporal lobe) often co-exist.

Before starting

- Introduce yourself to the patient.
- Explain the assessment and obtain his consent to carry it out.
- Ask him to try to describe his current problems.

The assessment

Orientation in time and place

TIME

Name: (year) (season) (month) (date) (day)

PLACE

Name: (country) (county/region) (town) (hospital) (floor)

Dysphasia

EXPRESSIVE

Assess whether the patient has difficulty in finding the right words whilst in conversation with you.

NOMINAL

Ask the patient to name some common objects such as a watch, pen, or penny coin; then to name the components of some of these objects, e.g. hour hand, winder, strap. Note that nominal dysphasia is a common form of expressive dysphasia.

RECEPTIVE

Assess whether the patient has difficulty understanding you by asking him to carry out some simple instructions such as "shut your eyes", "touch your nose", and "point to the door".

Dysarthria

Ask the patient to repeat some of the following: "British constitution", "West Register Street", "Baby hippopotamus", "Biblical criticism", and "Artillery".

Assess the structures involved in phonation and articulation by asking the patient to repeat:

- "Me, me, me" Lips
- "La, la, la" Tongue
- "Khu, gut" Palate
- "Ah" Palate, larynx, and expiratory muscles

Dysphonia

- Make a note of the patient's volume of speech, which may be low if there is weakness of the vocal cords or respiratory muscles.

Dyslexia

- Correct the patient's vision and ask him to read a short paragraph from a newspaper or magazine, and bear in mind that not all people who can't read are dyslexic!

Dysgraphia

- Ask the patient to write a sentence.

After the assessment

Ask the patient if he has any questions or concerns.

Thank the patient.

Summarise your findings, offer a differential diagnosis, and state the probable area of the lesion.

Table 38. Most common conditions likely to appear in a speech assessment station
Stroke
Dementia
Depressive disorder
Parkinson's disease
Myasthenia gravis

Psychiatry

Station 44
General psychiatric history

Specifications: The instructions for this station are likely to ask you to focus on one part of the history, e.g. presenting complaint and history of presenting complaint, social history, personal history.

! In taking a psychiatric history, it is especially important to put the patient at ease and to be seen to be sensitive, tactful, and empathic.

Before starting

- Introduce yourself to the patient.
- Ensure that he is comfortable. Make some general comments to put him at ease and build a rapport.

The history

- Name, age, and mode of referral (if not already provided).

Presenting complaint and history of presenting complaint

- Ask mainly open questions, e.g. *Can you tell me why you've come to the hospital today?* Try to form a diagnostic hypothesis and to validate or falsify it by asking further questions (logico-deductive approach).
- Ask about:
  - The onset and duration of symptoms.
  - The effect the symptoms are having on the patient's everyday life.
  - Any treatments so far.
- If you have not done so already, ask screening questions about mood, anxiety, obsessions, abnormal beliefs, and abnormal perceptions (see *Station 45: Mental State Examination*).

Informant history

If the patient is accompanied by a relative, friend, or carer, an informant history should be taken at this stage.

Past psychiatric history

- Previous episodes of illness.
- Previous treatments and their outcomes.
- Previous admissions, formal and informal.
- History of neglect or self-harm.
- History of violence.

Past medical history

- Current illness:
  - Acute illness.
  - Chronic illness.
  - Vascular risk factors.
- Past and childhood illnesses, including head injury.
- Surgery.

Drug history/current treatments

- Psychological treatments.
- Prescribed medication.
- Recent changes in prescribed medication.
- Over-the-counter drugs.
- Allergies.

Substance use

- Alcohol.
- Tobacco.
- Recreational drugs.

NB: Further questioning to establish dependence may be required if alcohol use and/or recreational drug use is high (see *Station 49: Alcohol history*).

Family history

- Determine if anyone in the family has suffered from psychiatric illness or attempted suicide, e.g. *Has anyone in the family ever had a nervous breakdown?*
- Partner: age or age at death, occupation, health.
- Children: age or age at death, occupation, health.
- Quality of relationships and atmosphere in the home.
- Recent events in the family.

Social history

- Self-care.
- Social support.
- Housing.
- Finances.

- Typical day.
- Interests and hobbies.
- Predominant mood and premorbid personality (sometimes included under personal history).

Personal history

- Birth.
- Developmental milestones.
- Childhood: emotional problems, serious illnesses, prolonged separation from parents.
- Educational achievement.
- Occupational history.
- Forensic history.
- Psychosexual history: past and present partners (including same sex partners), quality of relationships, frequency of sexual intercourse, sexual problems, physical or sexual abuse.
- Forensic history, e.g. *Have you ever had problems with the police or with the law?*
- Religious or spiritual orientation, e.g. *Do you believe there is something beyond us, like God?*

After taking the history

Ask the patient if there is anything he might add that you have forgotten to ask about.

Summarise your findings and offer a differential diagnosis.

Thank the patient.

Table 39. Most common conditions likely to appear in a psychiatric history station
Depressive disorder
Anxiety disorder, e.g. agoraphobia, social phobia, panic disorder, generalised anxiety disorder
Mixed depression-anxiety
Obsessive-compulsive disorder
Eating disorder
Mania and bipolar affective disorder
Schizophrenia and other delusional disorders

Station 45
Mental state examination

Specifications: The instructions for this station are likely to ask you to focus on one part of the mental state examination only, or to omit cognitive assessment. In some cases, the patient-actor might by replaced by a real patient on a video recording.

Before starting

Introduce yourself to the patient.

Explain that you would like to explore his thoughts and feelings, and ask him if this is OK.

Take out a pen and pad!

Assessing the mental state

The mental state can be assessed under 7 main headings:

1. Appearance and behaviour.
2. Speech.
3. Mood.
4. Abnormal thoughts.
5. Abnormal experiences.
6. Cognition.
7. Insight.

Appearance and behaviour

Begin by asking the patient some open questions, and focusing your attention on his *appearance and behaviour*.

- Level of consciousness.
- Appearance: body build, posture, general physical condition, grooming and hygiene, dress, physical stigmata such as scars, piercings, and tattoos.
- Inappropriate behaviour and attitude to the examiner. In particular note: facial expression, degree of eye contact, and quality of rapport.
- Motor activity/disorders of movement, e.g. agitation, retardation, tremor, dystonias, mannerisms.

Speech

Note:

- Amount, rate, volume, and tone of speech e.g. logorrhoea, pressure of speech, poverty of speech, mutism.

- Form of speech, e.g. tangentiality, circumstantiality, clang associations, neologisms, perseverations.

Mood

Note or ask about:

- Affect.
- Current mood state and severity. If there is the suggestion of a mood disorder, this should be explored further (see *Station 47: Depression history*).
- Biological symptoms: sleep, appetite, libido, energy.
- Ideas of harm to self, e.g. *People with problems similar to those that you have been describing often feel that life is no longer worth living. Have you felt that life is no longer worth living? (Yes) Have you actually thought of killing yourself?*
- Ideas of harm to others.
- Anxiety and anxiety symptoms, e.g. butterflies, giddiness, clamminess, palpitations, difficulty catching breath. If there is the suggestion of an anxiety disorder, this should be explored further.

! You are likely to fail this station if you do not ask about ideas of harm in an at-risk patient.

Abnormal thoughts

Note or ask about:

- Stream of thought, e.g. pressure of thought, poverty of thought, thought blocking.
- Form of thought, e.g. flight of ideas, loosening of associations, over-inclusive thinking.
- Content of thought.
  - Preoccupations, ruminations, obsessions, and compulsive acts, e.g. for obsessions, *Do certain things keep coming into your mind even though you try hard to keep them out?* And for compulsive acts, *Do you ever find yourself spending a lot of time doing the same thing over and over again even though you've already done it well enough?*
  - Phobias, e.g. *Do you have any special fears, like some people are afraid of spiders or snakes*?
  - Delusions and overvalued ideas. For obvious reasons, you cannot easily ask directly about delusions. Begin by an introductory statement and general questions, such as *I would like to ask you some questions that might seem a little bit strange. These are questions that we ask to everyone who comes to see us. Is that all right with you? Do you have any ideas that your friends and family do not share?* Explore any delusions and in particular ask about

their onset, their effect on the patient's life, and patient's explanation for them (degree of insight). If necessary, ask specifically about common delusional themes, e.g. delusions of persecution, reference, and control.

Abnormal experiences

Ask about:

- Illusions and hallucinations. Again begin by an introductory statement and general questions, such as *I gather that you have been under quite some pressure recently. When people are under pressure they sometimes find that their imagination plays tricks on them. Have you had any such experiences? Have you seen things which other people cannot see? Have you heard things which other people cannot hear?* Ask about all five modalities and explore any positive findings for content, onset, frequency, duration, and effect on the patient's life. Exclude pseudohallucinations and hypnogogic and hypnopompic hallucinations. For auditory hallucinations of voices, determine if there is more than one voice, and if the voices talk *to* the patient (second person) or *about* him (third person). If the voices talk *to* him, do they command him to do dangerous things and, importantly, is he likely to act on these commands? If the voices talk *about* him, do they comment on his every thought and action (running commentary)? Other forms of auditory hallucinations are *echo de la pensee* and *gedankenlautwerden*, both first rank symptoms of schizophrenia.
- Depersonalisation and derealisation, e.g. for depersonalisation *Have you ever felt unreal?* And for derealisation, *Have you ever felt that things around you are unreal?*

Cognition

See *Station 46: Cognitive assessment, the Folstein Mini-Mental State Examination.*

Insight

To determine degree of insight, ask the patient:

- *Do you think there is anything wrong with you?*

If no,

- *Why did you come to hospital?*

If yes,

- *What do you think is wrong with you?*
- *What do you think the cause of it is?*
- *Do you think you need treatment?*
- *What are you hoping treatment will do for you?*

After the mental state examination

Thank the patient.

Ensure that he is comfortable.

Summarise your findings. Note that mood should be reported as subjective mood and objective mood. Do not omit to comment on risk.

Offer a differential diagnosis.

Table 40. Principal features of key psychiatric disorders
See ICD-10 or DSM-IV for detailed diagnostic criteria.

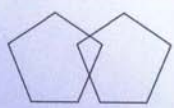
Depressive disorder	See Station 47
Mania	• Garish clothing, accessories, and makeup • Hyperactive, flirtatious, hypervigilant, assertive, and/or aggressive behaviour • Pressured speech; abnormalities of the form of speech • Euphoric or irritable or labile mood • Grandiose thoughts with flight of ideas and loosening of associations; mood congruent delusions • Hallucinations • Poor concentration • Poor insight
Schizophrenia	• Delusions • Hallucinations • Disorganised speech • Disorganised or catatonic behaviour • Negative symptoms
Agoraphobia	Persistent irrational fear of places difficult or embarrassing to escape from, such as places that are confined, crowded, or far from home. Increased reliance on trusted companions for accompaniment or, in severe cases, restriction to the home
Social phobia	Persistent irrational fear of being scrutinised by others and of being embarrassed or humiliated, either in most social situations or in specific social situations such as public speaking
Specific phobia	Persistent irrational fear of one or more objects or situations. Common specific phobias include heights, darkness, enclosed spaces, storms, animals, flying, driving, blood, injections, and dental and medical procedures

Panic disorder	Panic attacks are characterised by rapid onset of severe anxiety lasting for about 20–30 minutes. They may occur in the phobic anxiety disorder listed above or in other disorders such as OCD, PTSD, and organic disorders In panic disorder, panic attacks occur recurrently and unexpectedly. There is fear of the implications and consequences of an attack, e.g. having a heart attack, losing control, "going crazy". Anticipatory fear of panic attacks develops and may itself lead to further panic attacks and to significant behavioural changes such as the development of agoraphobia
Generalised anxiety disorder	Long-standing free-floating anxiety that may fluctuate but that is neither situational (phobic anxiety disorders) nor episodic (panic disorder). There is apprehension about a number of events far out of proportion to the actual likelihood or impact of the feared events. Other common symptoms include symptoms of autonomic arousal, irritability, poor concentration, muscle tension, tiredness, and sleep disturbances
Obsessive compulsive disorder	An obsessional thought is a recurrent idea, image, or impulse that is perceived as being senseless, that is unsuccessfully resisted, and that results in marked anxiety and distress A compulsive act is a recurrent stereotyped behaviour that is not useful or enjoyable but that reduces anxiety and distress. It is usually perceived as being senseless and is unsuccessfully resisted. A compulsive act may be a response to an obsessive thought or according to rules that must be applied rigidly
Post-traumatic stress disorder	A protracted and sometimes delayed response to a highly threatening or catastrophic experience characterised by numbing, detachment, flashbacks, nightmares, partial or complete amnesia for the event, avoidance of (and distress at) reminders of the event, and prominent anxiety symptoms. Associated psychiatric disorders are very common, especially depressive disorders, anxiety disorders, and alcohol and substance misuse
Adjustment disorder	A protracted response to a significant life change or life event characterised by depressive symptoms and/or anxiety symptoms that are not severe enough to meet a diagnosis of depressive disorder or anxiety disorder, but that nevertheless lead to an impairment of social functioning

Somatisation disorder (Briquet's syndrome)	A long history of multiple and severe physical symptoms that cannot be accounted for by a physical disorder or other psychiatric disorder. Compare to factitious disorders such as Münchausen syndrome and to malingering
Hypochondriacal disorder (hypochondriasis)	A fear or belief of having a serious physical disorder despite medical reassurance to the contrary
Eating disorders	See Station 52
Alcohol dependence	See Station 49

Station 46
Cognitive assessment, the Folstein Mini-Mental State Examination (MMSE)

Note: The MMSE is scored out of 30. Scores of less than 22 are indicative of significant cognitive impairment, scores of 22 to 25 are indicative of moderate cognitive impairment. The result is invalid if the patient is delirious or has an affective disorder.

Table 41. The Folstein Mini-Mental State Examination	Score
Orientation	
Name: (year) (season) (month) (date) (day)	5
Name: (country) (county/region) (town) (hospital) (floor)	5
Registration	
Name three common objects, e.g. apple, table, penny. Take one second to say each. Then ask the patient to repeat all three. Give one point for each correct answer. If the patient does not get them all correct, repeat them until he does	3
Attention and calculation	
Ask the patient to spell "world" forwards and then backwards. The score is the number of letters in the correct (reverse) order	5
Recall	
Ask for the three objects repeated above. Give one point for each correct answer	3
Language	
Name a "pencil" and a "watch".	2
Repeat the following: "No ifs, ands, or buts"	1
Follow a 3-stage command	
"Take this piece of paper in your right hand, fold it in half, and put it on the floor"	3
Written command	
Print the sentence "CLOSE YOUR EYES" in letters large enough for the patient to see clearly. Ask the patient to "Read this and do what it says"	1
Write a sentence	
The sentence should be written spontaneously and should contain a subject and verb and be sensible, but correct grammar is not necessary	3
Copy design	
Draw intersecting pentagons and ask the patient to copy it carefully. All 10 angles should be present and the pentagons should intersect 	1

Station 47
Depression history

! For this station, it is especially important to put the patient at ease and to be sensitive, tactful, and emphatic.

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions about his feelings, and ask for his consent to do this.

Ensure that he is comfortable.

Unless this information has been provided, ask for his name, age, and occupation.

The interview

- First ask open questions about the patient's current mood, listening attentively and gently encouraging him to open up.
- Ask about the onset of illness, and about its triggers and causes.

Ensure that you ask about:

- The core features of depression
  - Depressed mood.
  - Loss of interest.
  - Fatiguability.
- Other common features of depression
  - Poor concentration.
  - Poor self-esteem and self-confidence.
  - Guilt.
  - Pessimism.
- The somatic features of depression
  - Sleep disturbance.
  - Early morning waking.
  - Morning depression.
  - Loss of appetite and/or weight loss.
  - Loss of libido.
  - Anhedonia
  - Agitation and/or retardation.
- Ask about anxiety, obsessions, hallucinations, delusions, and mania, to exclude other psychiatric diagnoses.

- Take brief past medical, drug, and family history. Remember that drugs and alcohol are a common cause of depression.
- Assess the severity of the illness and its effect on the patient's life.
- **Ask about suicidal ideation** (also see *Station 48: Suicide risk assessment*). You may fail this station if you don't!

Before finishing

Ask the patient if there is anything he might add that you have forgotten to ask about.

Thank him and offer a further course of action.

Station 48
Suicide risk assessment

And so it was I entered the broken world
To trace the visionary company of love, its voice
An instant in the wind (I know not whither hurled)
But not for long to hold each desperate choice.

From *Broken Tower*, by Hart Crane (b. 1899; d. 1932, by suicide)

Before starting

- Introduce yourself to the patient.
- Establish rapport.

The assessment

Ask about:

- The history of the current episode of self-harm (if any):
  - What was the precipitant for the attempt?
  - Was it planned?
  - What was the method of self-harm, and did he expect this to be lethal?
  - Did he make a will or leave a suicide note?
  - Was he alone?
  - Was he intoxicated?
  - Did he take any precautions against discovery?
  - Did he seek help after the attempt?
  - How did he feel when help arrived?
- Assess risk factors for suicide:
  - Previous suicide attempt(s).
  - Recent life crisis.
  - Male sex, especially if between the ages of 25–44.
  - Divorced, widowed, or single.
  - Unemployed or in certain occupations, e.g. medicine, farming.
  - Poor level of social support.
  - Physical illness.
  - Psychiatric illness.
  - Substance misuse.
  - Family history of depression, substance misuse, or suicide.

- Mental state: assess current mood and exclude psychosis.
- Will he be returning to the same situation? What has changed?
- Ask about current suicidal ideation. Has he made any plans?

After the assessment

Thank the patient.

Summarise your findings, state the patient's suicide risk, and suggest a plan of action (e.g. further investigations, psychiatric assessment, hospitalisation...).

Station 49
Alcohol history

Before starting

Introduce yourself to the patient.

Establish rapport.

Explain to the patient that you would like to ask him some questions to evaluate his drinking habits, and ask for his consent to this.

The alcohol history

Ask about:

- Alcohol intake:
  - Amount.
  - Type.
  - Place.
  - Time.
- Features of alcohol dependence:
  1. Compulsion to drink.
  2. Primacy of drinking over other activities.
  3. Stereotyped pattern of drinking, e.g. narrowing of drinking repertoire.
  4. Increased tolerance to alcohol.
  5. Withdrawal symptoms, e.g. anxiety, sweating, tremor ("the shakes"), nausea, fits, *delirium tremens*.
  6. Relief drinking to avoid withdrawal symptoms.
  7. Resinstatement after abstinence.

Medical history

Ask about depression and the common medical complications of alcohol abuse, e.g. peptic ulceration, pancreatitis, ischaemic heart disease, liver disease, peripheral neuropathy.

Drug history

Note that:

- Substance abuse is common in alcoholics.
- Alcohol potentiates the effects of certain drugs such as phenytoin.

Family history

Social history

Cover employment, housing, marital problems, financial problems, and legal (forensic) problems.

After finishing

Give the patient feedback on his drinking habits (e.g. number of units drunk versus recommended number of units) and, if appropriate, suggest ways for him to cut down his alcohol consumption.

Ask him if he has any questions or concerns.

Thank him for his cooperation.

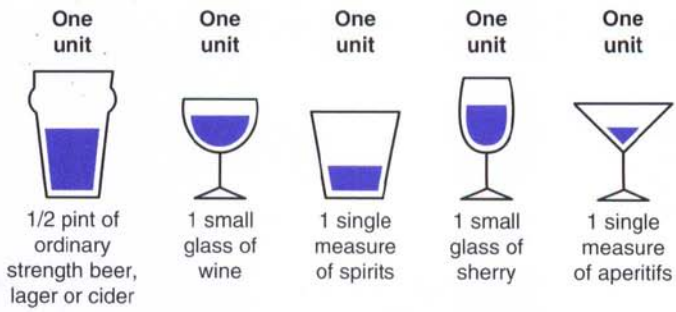


Figure 29. Equivalences for one unit of alcohol. Note that one bottle of wine is equivalent to approximately 7 units, and one bottle of spirits to approximately 30 units

Station 50
Capacity and its assessment

In this station, you may be asked to carry out a formalised assessment of competence to decide on the ability of a patient to give informed consent. Alternatively, you may simply be asked to discuss the subject.

The first thing to note is that the terms capacity and competence are often used interchangeably but, strictly speaking, capacity is the legal presumption that adult persons have the ability to make decisions, whereas competence is a clinical determination of a patient's ability to make decisions about his treatment.

Issues about capacity frequently arise in three groups of patients: children and adolescents, patients with learning difficulties, and patients with mental illness. A person has capacity so long as he has the ability to understand and retain relevant information for long enough to reach a *reasoned* decision, **regardless of the actual decision reached**. An adult person should be presumed to have the competence to make a particular decision until a judgement about capacity can be made. This judgement can only be made about present capacity, not about past or future capacity, and it should only be made for a specific decision, as different decisions require different levels of capacity. If capacity is lacking or cannot be established (e.g. in an emergency situation), the doctor in charge has the responsibility to act in the best interests of the patient, although it is good practice for him to involve colleagues, carers, and relatives in the decision-making. In difficult situations or if there are differences of opinion about the patient's best interests, the doctor should consult a senior colleague or seek legal advice.

Assessing capacity

1. Ensure that the patient understands:
    - What the intervention is.
    - Why the intervention is being proposed.
    - The alternatives to the intervention, including no intervention.
    - The principal benefits and risks of the intervention and of its alternatives.
    - The consequences of the intervention and of its alternatives.
2. Ensure that the patient retains the information for long enough to weigh it in the balance and reach a reasoned decision, whatever that decision may be. In some cases, the patient may not have the cognitive ability or emotional maturity to reach a reasoned decision, or may be unduly affected by mental illness.
3. Ensure that the patient is not subject to coercion or threat.

It is important to bear in mind that a patient's capacity can be enhanced by, for example:

- Making your explanations easier to understand, e.g. using diagrams.
- Seeing the patient at his best time of day.

- Seeing the patient with a friend or relative.
- Improving the patient's environment, e.g. finding a quiet side-room.
- Adjusting the patient's medication, e.g. decreasing the dose of sedative drugs.

Station 51
Common Law and the Mental Health Act

Treatment under Common Law

Competent adults have a right to refuse medical treatment, even when doing so may result in permanent physical injury or death. If a competent adult refuses consent or lacks the competence to provide consent, no one can provide consent on his behalf, not even his next of kin. That having been said, treatment without consent can be given under Common Law:

- If serious harm or death is likely to occur and there is doubt about the patient's competence at the time, and no advanced directive has been made. The clinician must be able to justify that he is acting in the "best interests" of the patient, and in accordance with established medical practice.
- In an emergency, to prevent immediate serious harm to the patient or to others or to prevent a crime.

The Mental Health Act

The Mental Health Act (MHA) 1983 consolidates the Mental Health Act 1959 as amended by the Mental Health (Amendment) Act 1982. It is the principal Act governing not only the compulsory admission and detention of people to a psychiatric hospital, but also their treatment, discharge from hospital, and aftercare. People suffering from a mental disorder as defined by the Act can be detained ("sectioned") under the Act if it is considered that they are a risk to themselves (either directly as a result of self-harm or indirectly as a result of their disorder) or to others. See Table 42 for details of common sections. Note that Scotland is governed by the Mental Health (Care and Treatment) (Scotland) Act 2003 and Northern Ireland by the Mental Health (Northern Ireland) Order 1986.

Definitions (Section 1 of the Mental Health Act)

Mental disorder is mental illness, arrested or incomplete development of mind, psychopathic disorder, and any other disorder of disability of mind.

The Act actually does not define mental illness, the most common form of mental disorder, but does define mental impairment, severe mental impairment, and psychopathic disorder. Note that these definitions are legal and not medical.

Mental impairment is a state of arrested or incomplete development of mind including *significant* impairment of intelligence and social functioning and associated with abnormally aggressive or seriously irresponsible conduct.

Severe mental impairment is the same as mental impairment but includes *severe* impairment of intelligence and social functioning instead of just *significant* impairment of intelligence and social functioning.

Psychopathic disorder is a persistent disorder or disability of mind resulting in abnormally aggressive or seriously irresponsible conduct.

The Act *does not* regard promiscuity, other immoral conduct, sexual deviancy, or dependence on alcohol or drugs as mental disorder.

See Table 42 for a summary of the Civil Sections of the Mental Health Act.

Treatment Sections of the Mental Health Act (Summary)

Section 57: Treatment requiring consent AND a second opinion

- Neurosurgery.
- Surgical implantation of hormones to reduce the male sex drive.

Section 58: Treatment requiring consent OR a second opinion

- Medication for the treatment of a person's mental disorder if 3 months have gone by since that person first had the treatment during their current period of detention under the Act.
- Electroconvulsive therapy.

Section 62: Urgent treatment

The requirements of Sections 57 and 58 are not applicable if urgent treatment is required. Urgent treatment is required if it is

- To save a patient's life.
- To prevent a serious deterioration in the patient's condition, so long as the treatment is not irreversible.
- To alleviate serious suffering so long as the treatment is neither irreversible nor hazardous.
- To prevent the patient from behaving violently or being a danger to self or others so long as the treatment is neither irreversible nor hazardous, and represents the minimum interference necessary.

Sections 135 and 136

Police powers.

Section 135 enables the removal of person from his premises to a place of safety. Valid for 72 hours.

Section 136 enables the removal of a person from a public place to a place of safety by a police officer. The person must appear to the police officer to have a mental disorder. Valid for 72 hours.

NB: Penal sections of the Mental Health Act are not covered in this station.

Appeals

Patients detained under Sections 2 and 3 (and some other sections) may appeal against their section, usually through a Mental Health Review Tribunal (MHRT). MHRTs consist

Table 42. Civil Sections of the Mental Health Act (Summary)

Section	Description	Duration	Treatment	Application/Recommendations	Discharge/Renewal
2	Admission for assessment	28 days	Can be given but note that the MHA only authorises treatment of the mental disorder itself or conditions directly resulting from the mental disorder. Other conditions can only be treated under Common Law	Application by ASW or nearest relative. Recommendation by two doctors (at least one must be Section 12 approved)	Patient may appeal to MHRT in first 14 days. Can be discharged by RMO, hospital managers, or nearest relative. Usually converted to Section 3 if longer period of detention is required
3	Admission for treatment	6 months	Can be given for first 3 months, then consent or second opinion is needed. Note that although treatment can be given, it can only be given for the patient's mental disorder	Application by ASW or nearest relative. Recommendation by two doctors (at least one must be Section 12 approved). Importantly, the doctors must agree that treatment is likely to alleviate or prevent a deterioration in condition	Patient may appeal to MHRT at any time. Can be discharged by RMO, hospital managers, or nearest relative. Can be renewed for a further 6 months and then for a year at a time
4	Emergency admission for assessment (used in an emergency in lieu of a Section 2)	72 hours	Consent needed unless acting under Common Law	Application by ASW or nearest relative. Recommendation by any doctor	Patient cannot appeal. Can be discharged by RMO only
5(2)	Doctor emergency holding order (patient already admitted to hospital)	72 hours	Consent needed unless acting under Common Law	Recommendation by the RMO or his nominated deputy	Patient cannot appeal. Can be discharged by RMO only
5(4)	Nurse emergency holding order (patient already being informally treated *for a mental disorder*)	6 hours	Consent needed unless acting under Common Law	Recommendation from a registered mental nurse	Patient cannot appeal
117	Automatically applies if a patient has been detained under Sections 3, 37, 47, and 48. Under Section 117 it is the duty of the local health authority and the local social services authority to provide aftercare. Unlike under Supervised Discharge, there is no obligation for the patient to accept it. Supervised Discharge can only apply to a patient having been detained under a treatment section. If the patient is judged to be especially at risk of harming himself or others, he can also be placed on the Supervision Register				

Notes:
ASW, Approved Social Worker.
Section 12 approved, Section 12 approval is usually granted to psychiatrists having obtained Membership of the Royal College of Psychiatrists (MRCPsych) or having more than 3 years' experience.
RMO, Responsible Medical Officer, usually the consultant in charge.
MHRT, Mental Health Review Tribunal consisting of an independent doctor, a legal person, and a lay person.

of an independent doctor, a legal person, and a lay person and hear reports from the patient or the patient's solicitor, the RMO, the ASW, and others involved in the patient's care.

Station 52
Eating disorders history

Before starting

Introduce yourself to the patient.

Explain that you are going to ask some questions about her eating habits, and ask for her consent to do this.

Ensure that she is comfortable.

If this information is not provided, ask for her name, age, and occupation.

The history

Weight and perception of weight

Determine:

- Her current weight and height.
- The amount of weight that she has lost, and over what period.
- Whether the weight loss has been intentional.
- Whether she still considers that she is overweight.
- How often she weighs herself/looks at herself in the mirror.

Diet and compensatory behaviours

Ask about:

- Amount and type of food eaten in an average day.
- Binge eating.
- Vomiting.
- The use of laxatives, purgatives, diuretics, appetite suppressants, and stimulants.
- Physical exercise.

Other

Ask about:

- Menstrual periods.
- Effect on patient's life:
  - Relationships.
  - Medical complications, e.g. anaemia, peptic ulceration, constipation.
  - Psychiatric complications, especially substance misuse, depression, and self harm.
- Past medical, drug, and family history (briefly and only if you have time left).

Before finishing

Ask the patient is there is anything she might add that you have forgotten to ask about.

Determine the patient's level of insight into her problem.

Thank the patient, offer feedback, and suggest a further course of action, e.g. informant history from the mother, physical examination, investigations, dietary advice, psychotherapy, antidepressants, hospitalisation.

Table 43. Differentiating anorexia nervosa from bulimia nervosa

DSM-IV diagnostic criteria

Anorexia

A. Refusal to maintain normal body weight at more than 85% of expected body weight.
B. Intense fear of gaining weight or becoming fat.
C. Disturbed perception of body weight or shape.
D. In postmenarchal females, amenorrhoea for at least three consecutive cycles (if not on the oral contraceptive pill).

Bulimia

A. Recurrent episodes of binge eating.
B. Recurrent inappropriate compensatory behaviour to prevent weight gain.
C. Episodes of binge eating and compensatory behaviour occur at least twice a week for a period of 3 months.
D. Self-evaluation is unduly influenced by body shape and weight.
E. Disturbance does not occur exclusively during periods of anorexia nervosa.

ENT and ophthalmology



Station 53
Hearing and the ear

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Sit him so that he is facing you and ensure that he is comfortable.

The history

- Name, age, and occupation, if this information has not already been provided.
- Ask the patient if there has been any loss of hearing.

If there has been loss of hearing, assess its:

- Characteristics (bilaterality, onset, duration, severity, impact on the patient's life).
- Associated features (tinnitus, vertigo, pain, discharge, weight loss).
- Possible causes (trauma, infection, antibiotics, family history).
- Impact on the patient's life.

The examination

Hearing

Test hearing by whispering into the ear at various distances, whilst distracting or occluding the other ear. As whispering into people's ears may no longer be considered politically correct, you may prefer rubbing your fingers together instead.

Tuning fork tests

! **Use a 512 Hz tuning fork, and not the larger 128 Hz or 256 Hz tuning forks used for neurological examinations.**

- The Rinne test. Place the base of the vibrating tuning fork on the mastoid process of each ear. Once the patient can no longer "hear" the vibration, move the tuning fork in front of the ear. If the tuning fork can be heard, air conduction is better than bone conduction, and there is therefore no conductive hearing loss. The test is said to be *positive*. If the tuning fork cannot be heard, there is a conductive hearing loss, and the test is said to be *negative*.

! **The false negative Rinne test: if the Rinne test is performed on a deaf ear, it may appear negative because the vibration is transmitted to the opposite ear.**

- The Weber test. Place the vibrating tuning fork in the midline of the skull. If hearing is normal, or if hearing loss is symmetrical, the vibration should be heard equally in both ears.

Note:

- If there is conductive deafness in one ear, the vibration is best heard *in that same ear* (since there is no background interference).
- If there is sensorineural deafness in one ear, the vibration is best heard in the other ear.

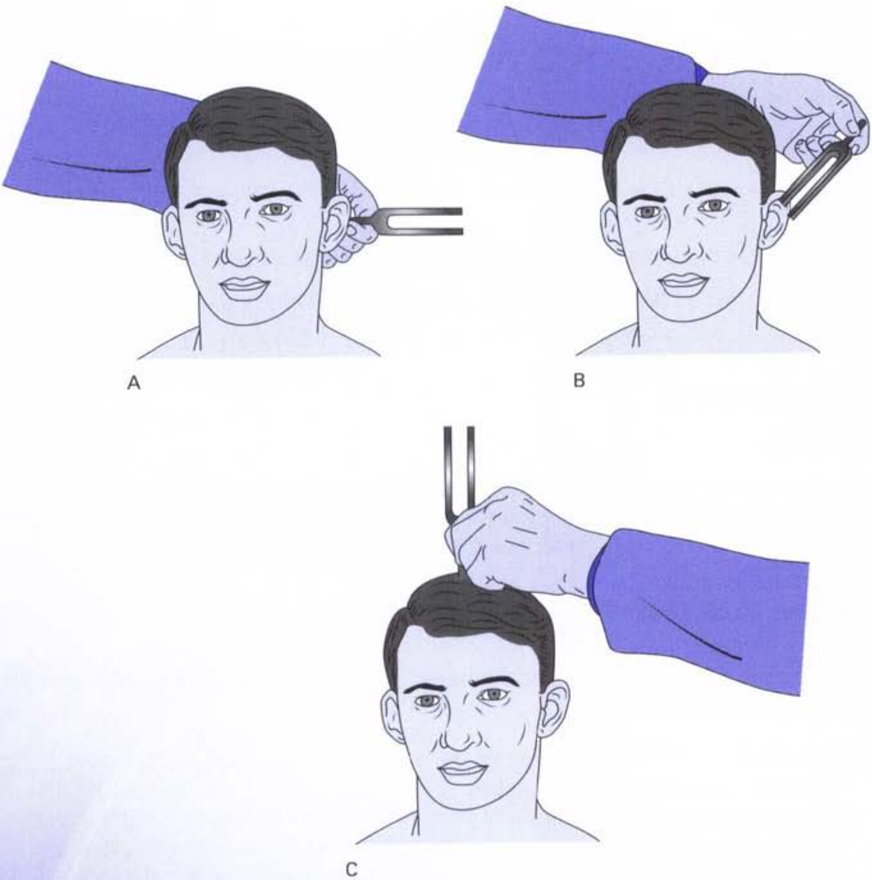


Figure 30. The Rinne (A, B) and Weber (C) tests

Auroscopy

- Examine the pinnae for size, shape, deformities, pre-auricular sinuses.
- Look behind the ears for any scars.
- Palpate the pre-auricular, post-auricular, and infra-auricular lymph nodes.

- Affix a speculum of appropriate size onto the auroscope.
- Gently pull the ear so as to straighten the ear canal and, holding the auroscope like a pen, introduce it into the external auditory meatus.

! If examining the right ear, use your right hand to hold the auroscope. If examining the left ear, use your left hand.

- Through the auroscope, inspect the ear canal (*otitis externa*, exotoses, wax) and the tympanic membrane (normal anatomy, effusions, cholesteatomata, perforations, grommets).

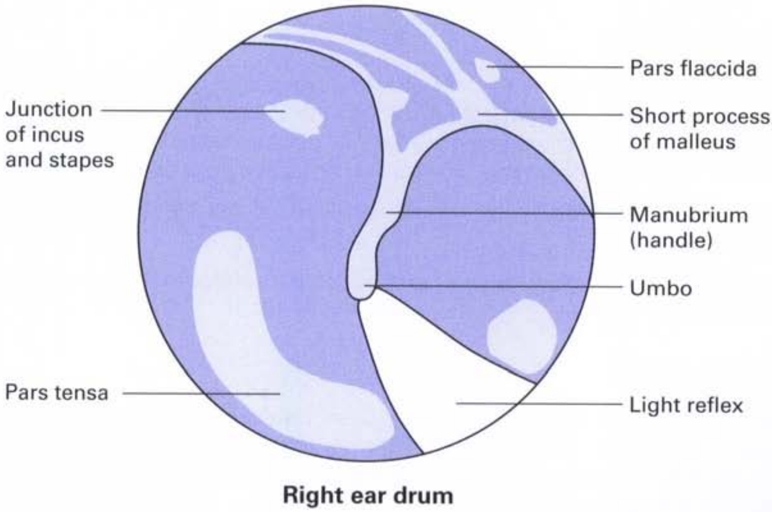


Figure 31. The normal right ear drum

After examining the ear

Ask the patient if he has any questions or concerns.
Thank the patient.
Summarise your findings and offer a differential diagnosis.

Station 54
Vision and the eye (including fundoscopy)

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ensure that he is comfortable.

The examination

1. Visual acuity

- *Snellen chart*. Asess each eye individually, correcting for any refractive errors (glasses, pinhole). If the patient cannot read the Snellen chart, either move him closer or ask him to count fingers. If he fails to count fingers, test whether he can see hand movements and, if he cannot, test whether he can see light.
- *Test types* (or fine print). Again, assess each eye individually, correcting for any refractive errors.
- *Ishihara plates*. Indicate that you could use Ishihara plates to test colour vision specifically.

2. Visual fields

- *Confrontation test*. Sit at 1 m from the patient. Cover your left eye with your left hand and ask the patient to cover his right eye and to fix his gaze upon your right eye. Starting at a distance, bring an equidistant moving finger into each of his upper and lower temporal fields. Then change hands and test his upper and lower nasal fields. Compare the patient's visual field to your own. Test the other eye.
- *Visual inattention test*. Ask the patient to fix his gaze upon you and simultaneously bring a moving finger into each of the patient's right and left visual fields. In some parietal lobe lesions, only an ipsilateral finger is perceived by the patient.
- *Mapping of central visual field defects*. Indicate that you could use a red pin to delineate the patient's blind spot and any central visual field defects.

3. Pupillary reflexes

- *Inspection*. Inspect the pupils for size and shape.
- *Pupillary reflexes*. Ask the patient to fixate on a distant object and, using a pen torch, test the direct and consensual pupillary reflexes. If the consensual pupillary reflex is absent, there is a relative afferent pupillary defect, or Marcus Gunn pupil.

- *Accommodation reflex*. Test the accommodation reflex by asking the patient to focus on a distant object and then on a finger held at 30 cm from his face.

4. Eye movements

- *Inspection*. Look for a squint.
- *Cover test*. Indicate that you could perform a cover test to look for a concomitant squint.
- *Eye movements*. Fix the patient's head and ask him to track your finger through an "H" pattern. Ask him to report any double vision.
- *Nystagmus*. Look out for nystagmus at the extremes of gaze. You can do this as part of eye movements or separately by fixing the patient's head and asking him to track your finger through a cross pattern.

5. Fundoscopy

Explain the procedure, mentioning that it may be uncomfortable. Darken the room and ask the patient to fixate on a distant object (or to "look over my shoulder"). State to the examiner that, ideally, the pupils should have been dilated using a solution of 1% cyclopentolate.

- *Red reflex*. Test from a distance of 1 m by looking through the ophthalmoscope. An absent red reflex is usually caused by a cataract.
- *Fundoscopy*. Use your right eye to examine the patient's right eye, and your left eye to examine the patient's left eye. If you use your left eye to examine the patient's right eye, you may appear more caring than the examiner might like to see. Look at the optic nerve head, the vessels, and the macula. Describe any features according to protocol, e.g. *There are soft exudates at 3 o' clock, two disc diameters away from the disc.*

! **If the station is examining fundoscopy alone, the patient is likely to be replaced by a model in which the retinas are very easy to visualise. Before the exam, it is a good idea to look at as many retinas as you can, both in patients and in textbooks/on the internet. Conditions likely to be examined include hypertensive retinopathy, diabetic retinopathy, glaucoma, and papilloedema.**

After the examination

Ask the patient if he has any questions or concerns.

Thank the patient.

Summarise your findings and offer a differential diagnosis.

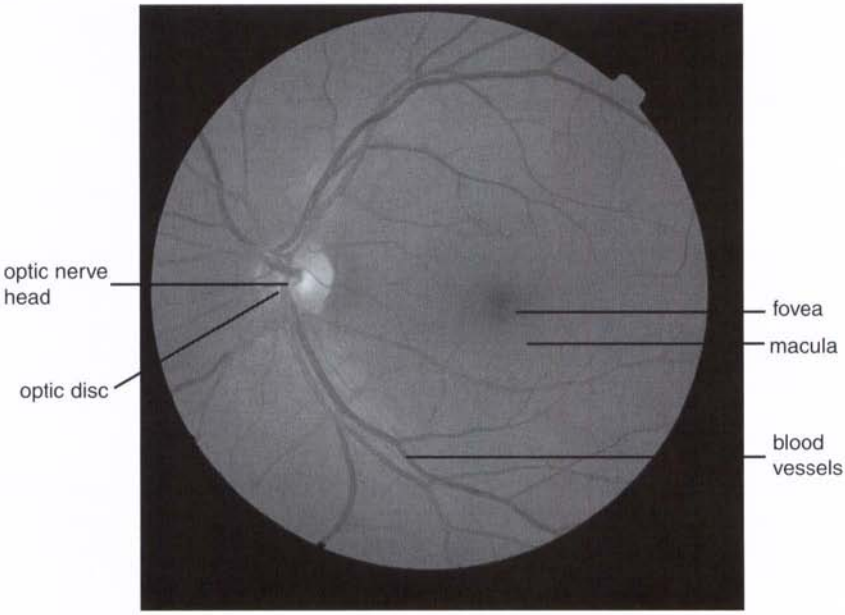


Figure 32. The normal left retina. DECS Image Library (GSTT 2005), with permission

Station 55
Smell and the nose

Specifications: This station may involve a model of a nose in lieu of a patient.

Before starting

Introduce yourself to the patient.

Explain the examination and ask him for his consent to carry it out.

Position him so that he is facing you.

Ensure that he is comfortable.

The history

- Briefly establish the nature of the problem.
- If there is obstruction of the nasal passages, determine its:
  - Characteristics (nasal passage affected, onset, duration, timing, severity).
  - Associated symptoms (facial pain, inflammation, itching, rhinorrhoea, sneezing, snoring, anosmia).
  - Possible causes (asthma, hay fever, other allergies, trauma, surgery, other).
  - Impact on everyday life.

The examination

Inspection

- Observe the external appearance of the nose from the front, from the side, and from above. Look for evidence of deformity, inflammation, nasal discharge, skin disease, and scars.
- Examine the nasal vestibule, anterior end of the septum, and anterior ends of the inferior turbinates. Do this first by elevating the tip of the nose, and then with the help of a Thudicum speculum and torch.
- Look into the mouth.

Otoscopy

- Use an otoscope in conjunction with a Thudicum speculum to assess the nasal septum and the inferior and middle turbinates. Look for septal deviation, mucosal inflammation, polyps, and foreign objects.

! **A more detailed view of the nasal cavities can be obtained using a flexible (fibre-optic) nasendoscope.**

Nasal airflow

- Ask the patient to breathe out through his nose onto a mirror or cold tongue depressor positioned under the nose. If the nasal passages are not obstructed, there should be condensation under both nostrils.
- Assess inspiratory flow by occluding one nostril and asking the patient to sniff. Repeat for the other side.

Smell

- Assess sense of smell by asking the patient to identify fragrances from a series of bottles containing different odours.

After examining the nose

Ask the patient if he has any questions or concerns.

Thank the patient.

Summarise your findings and offer a differential diagnosis.

Station 56
Thyroid examination

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ask him to expose his neck and upper body.

Sit him in a chair.

The examination

Inspection

- Inspect the patient generally, in particular looking for any signs of thyroid disease. The age and sex of the patient has an important bearing on the differential diagnosis of a goitre.
- Inspect the neck, looking for asymmetry, scars, or other lesions.

! **A goitre, or enlarged thyroid gland, is seen as a swelling below the cricoid cartilage, on either side of the trachea.**

- Ask the patient to take a sip of water. The following structures move upon swallowing: thyroid gland, thyroid cartilage, cricoid cartilage, thyroglossal cyst, lymph nodes.
- Ask him to stick his tongue out. A midline swelling which moves upwards when the tongue is protruded is a thyroglossal cyst.
- Position yourself behind the patient and inspect for proptosis.

Palpation

- Ask him if there is any tenderness in the neck area.
- Putting one hand on either side of his neck, examine the anterior and posterior triangles of the neck with your fingertips. For any mass, try to determine its size, consistency, and fixity.
- Palpate the thyroid gland. Try to determine its size, symmetry, and consistency, and whether it is tender to touch. Note that the normal thyroid gland is often not palpable.
- Palpate the cervical lymph nodes.
- Palpate for tracheal deviation in the suprasternal notch (see *Station 23: Respiratory system examination*).

Percussion

- Percuss for the dullness of a retrosternal goitre over the sternum and upper chest.

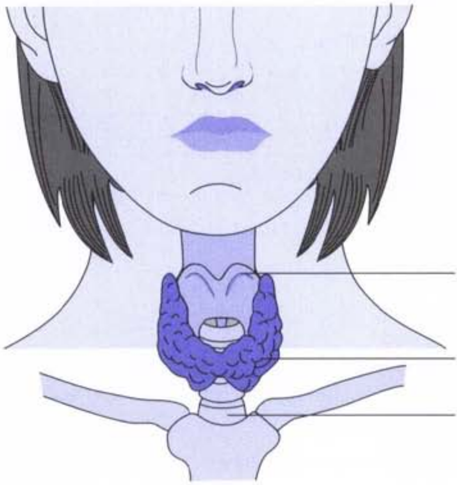


Figure 33. Anatomy of the normal thyroid gland

Auscultation

- Auscultate over the thyroid for bruits. Ask the patient to hold his breath as you listen; a soft bruit is sometimes heard in thyroxicosis.

After the examination

Help the patient to put his clothes back on.

Ensure that he is comfortable.

Ask him if he has any questions or concerns.

Thank him.

Offer a diagnosis or differential diagnosis.

Give suggestions for further management, e.g. thyroid function tests, thyroid antibodies, ultrasound examination of the thyroid, iodine thyroid scan, fine needle aspiration cytology.

Goitres and thyroid disease

Signs of **hyperthyroidism**: enlarged thyroid gland or thyroid nodules, thyroid bruit, hyperthermia, diaphoresis, dehydration, tremor, tachycardia, arrhythmia, congestive heart failure, onycholysis.

- Grave's disease (commonest cause of hyperthyroidism): uniformly enlarged smooth thyroid gland usually in a younger patient; lid retraction, lid lag, chemosis, periorbital oedema, proptosis, diplopia, pre-tibial myxoedema, thyroid acropachy
- Toxic multinodular goitre: enlarged multinodular goitre in a middle-aged patient
- Toxic nodule and de Quervain's thyroiditis are less common

Signs of **hypothyrodism**: hypothermia and cold intolerance, weight gain, slowed speech and movements, hoarse voice, dry skin, hair loss, coarse facial features and facial puffiness, hypotension, bradycardia, and hyporeflexia

- Hashimoto's thyroiditis (commonest cause of hypothyroidism): moderately enlarged rubbery thyroid gland, usually in a female patient aged 30–50 years; initial hyperthyroidism that progresses to hypothyroidism and, if untreated, to myxoedema (non-pitting oedema)

Table 44. Most common conditions likely to come up in a neck examination station
Thyroglossal cyst
Toxic goitre: diffuse (Grave's disease), multinodular, toxic nodule (Plummer's disease)
Hashimoto's thyroiditis
Thyroid neoplasm
Enlarged lymph nodes
Physiological goitre of puberty or of pregnancy (or of both, these days)

NB: Iodine deficiency can also cause a goitre but this is seen only rarely in developed countries.

Paediatrics

Station 57
Paediatric history

General points:

- As a rule of thumb, the older the child the more he should be involved in the history-taking process.
- Observe the child's behaviour as you take the history.
- The parent's concerns and the child's concerns are likely to differ: try as much as possible to address both.

Before starting

Introduce yourself to the parent and child (in that order).

Explain that you are going to ask some questions and obtain consent to do this.

Ensure that the patient is comfortable; younger children may need toys to keep them distracted.

The history

- Ask the age, sex, and preferred name of the child.
- Confirm the relationship of the accompanying adult.

Presenting complaint and history of presenting complaint

- Ask about the nature of the presenting complaint and how it has affected the child's daily routine. Start by using open questions and then explore the symptoms as you might in any other history. Ask about onset, duration, previous episodes, pain, associated symptoms (e.g. nausea, vomiting, diarrhoea, urinary frequency, constipation, altered consciousness), and treatments.

! **Do not under any circumstances omit to address, or denigrate, the parent's concerns.**

Systems review

- The major systems should be covered briefly, placing the emphasis on areas of particular relevance.
  - *General health*: liveliness, change in behaviour, ability to recover from a minor illness.
  - *ENT:* sore throat, earache, infections, deafness, nose bleeds.
  - *CVS and RS*: breathing problems (feeding problems in young infants), shortness of breath, exercise tolerance, colour changes (blue attacks, pallor), wheeze, croup, stridor, cough, chest infections, tiredness, heart murmurs.
  - *GIS*: weight gain, feeding, vomiting, diarrhoea, constipation, jaundice, abdominal pain.
  - *GUS*: frequency, discharge, enuresis.

- *NS*: headaches, fits, visual disturbances, balance and coordination, muscle problems.
- *MSS*: limps, joint stiffness, pain, swelling, redness.
- *Skin:* rash, eczema.

Past medical history

- Similar problems in the past?

Ask about these topics if you think that they might be relevant to the child's presenting complaint.

- Medical problems (epilepsy, diabetes, asthma, etc.)
- Surgery.
- Birth history.
  - Maternal obstetric history (illnesses or infections during pregnancy, blood pressure, foetal growth, drugs during pregnancy, e.g. anti-convulsants, narcotics, smoking, alcohol).
  - Mode of delivery and any problems.
  - Gestation at delivery.
  - Birth weight.
  - Problems after birth and admission to Special Care Baby Unit.
- Developmental milestones (smiling, sitting, walking and talking – see *Station 58: Developmental assessment*).
- Feeding (breast, bottle, how long, how much).
- Sleeping patterns.
- Childhood illnesses.
- Immunisations.

Drug history

- Prescribed and over-the-counter medications.
- Allergies.

Family history

- Health of parents and siblings.
- Congenital/genetic abnormalities. (*Are there any illnesses that run in the family?*)
- Cosanguinity.

Social history

- Parental occupation.
- Details of home life, siblings.
- Behaviour at home and at school.
- Pets and smokers in the home (if relevant).

After taking the history

Ask the parent if there is anything that he might add that you have forgotten to ask about.
Ask the parent and child if they have any specific questions or concerns.
Thank the parent and child.
Summarise your findings and offer a differential diagnosis.

Table 45. Most common conditions likely to come up in a paediatric history station
Respiratory conditions, e.g. asthma, upper respiratory tract infection
Headache
Behavioural problems, e.g. enuresis
Fits, e.g. febrile convulsions, epilepsy
Childhood infections/rashes and immunisation compliance (see *Station 66: Child immunisation programme*).

Station 58
Developmental assessment

Development in the early years of life is fairly consistent from child to child and any significant deviation from this pattern is thus a reliable marker of pathology.

The four parameters by which development is assessed

1. Gross motor skills.
2. Vision and fine movement.
3. Hearing and language.
4. Social behaviour.

Key ages for developmental assessment

1. Newborn.
2. Supine infant (1.5–2 months).
3. Sitting infant (6–9 months).
4. Toddler (18–24 months).
5. Communicating child (3–4 years).

The developmental assessment

Specifications: This station may require you to carry out a developmental assessment or watch a short video and answer some questions about it.

The developmental assessment is usually performed alongside a general history, so many of the subject headings are the same as in *Station 57: Paediatric history*. Remember to tailor the assessment to the age of the child and that much of the assessment can and should be carried out by observation alone.

Before starting

- Introduce yourself to the parent and child.
- Explain that you are going to ask some questions and obtain consent to do this.
- Ensure that the child is comfortable; younger children may need toys to keep them distracted.
- Ask for the child's red book.

The assessment

- Ask for the age, sex, and preferred name of the child.

Presenting complaint and history of presenting complaint

- Ask about the nature of the presenting complaint and its effects on the child's daily routine. Use open questions.

Table 46. Average age for the acquisition of key milestones

	Motor skills	Vision and fine movement	Hearing and language	Social behaviour
Newborn	Symmetrical movements, limbs flexed, head lag on pulling up	Looks at light/faces in direct line of vision	Startles to noises/ voices	Responds to parents
Supine infant (1.5–2 months)	Raises head in prone position	Tracks objects	Cries, coos, grunts	Smiles at faces
Sitting infant (6–9 months)	6/12: Sits unsupported 8/12: Crawls 9/12: Stands supported	6/12: "Palmar grasp" 6–7/12: Transfers objects	Babbles	Develops stranger and separation anxiety. Likes playing "peek-a-boo"
Toddler (18–24 months)	12/12: Stands unsupported and makes first steps 15/12: Walks 24/12: Climbs stairs	12/12: "Pincer grip" 16/12: Uses spoon or fork	12/12: Vocabulary of 1–3 words. 24/12: Vocabulary of >200 words; makes phrases	Is prone to temper tantrums
Communicating child (3–4 years)	Stands on one leg. Jumps. Pedals tricycle	Mature pencil grip. Draws a circle and a cross	Makes complete sentences	Plays co-operatively with other children. Imitates parents. Achieves urinary continence

Developmental/past medical history

- Birth history
  - Maternal obstetric history.
  - Mode of delivery and any problems.
  - Gestation at delivery.
  - Birth weight.
  - Problems after birth and admission to Special Care Baby Unit.
  - Initial feedings.
  - Medical problems, childhood illnesses, immunisations.
- Key milestones
  - Smiling.
  - Sitting.
  - Walking.
  - Talking.

- Current abilities
  - Motor skills.
  - Vision and fine movement.
  - Language and hearing.
  - Social behaviour.

Systems review

Drug history

Family history

Social history

After the assessment

- Ask the parent if there is anything they might add that you have forgotten to ask about.
- Ask the parent if he/she has any specific questions or concerns.
- Thank the parent and child.
- Summarise your findings and offer a differential diagnosis.

Table 47. Most common conditions likely to come up in a developmental assessment station
Late walker
Developmental disorder, e.g. autism
Mental retardation
Emotional disorder, e.g. enuresis, elective mutism, sleep disorders
Behavioural disorder, e.g. conduct disorder, ADHD

Station 59
Neonatal examination

Specifications: A mannequin in lieu of a baby. The baby's "mother" is also in the room.

Before starting

- Introduce yourself to the mother, explain the examination, and ask her for her consent to carry it out.
- Wash your hands.
- Ask the mother about:
  - Complications of the pregnancy, if any.
  - Type of delivery.
  - The baby's gestational age at the time of birth.
  - The baby's birth weight.
  - The baby's feeding, urination, and defaecation.
  - Any concerns that she might have.

The examination



Figure 34. Neonatal examination, general order of the examination

General inspection

Note colour, position, tone, movements, skin abnormalities, and any other obvious abnormalities. Are there any signs of respiratory distress?

Head

- Palpate the anterior and posterior fontanelles.
- Measure the head circumference.

Face

- Inspect the face for dysmorphological features.
- Check the patency of the ears and nostrils.
- Using an ophthalmoscope, test the red reflex and pupillary reflexes.
- Test eye movements (squint).
- Elicit the rooting reflex by lightly touching a corner of the baby's mouth.
- Introduce a finger into the baby's mouth and feel the palate (cleft palate).
- Examine the palate using a torch and spatula.

Chest

- Take the radial and femoral pulses, one after the other and then both at the same time (radiofemoral delay).
- Listen to the heart using the bell of your stethoscope.
- Listen to the lungs using the diaphragm of your stethoscope. Turn the infant over and listen over the back. The respiratory rate should be less than 60 breaths per minute.

Back

- Examine the spine, focusing on the sacral pit (neural tube defects).
- Check the position and patency of the anus.

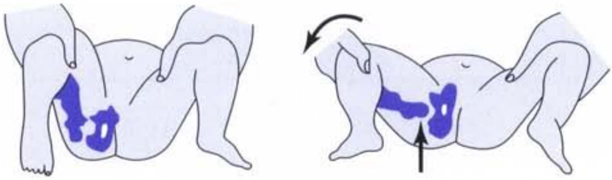
Abdomen

- Inspect the abdomen and the umbilical cord.
- Palpate the abdomen.
- Palpate specifically for the spleen, liver, and kidneys (thumb in front, finger in the loin).
- Feel for the femoral pulses.
- Examine the genitalia, in male infants note the position of the urethral meatus (hypospadias), ask about the urine stream, and feel for the testicles (undescended testes).

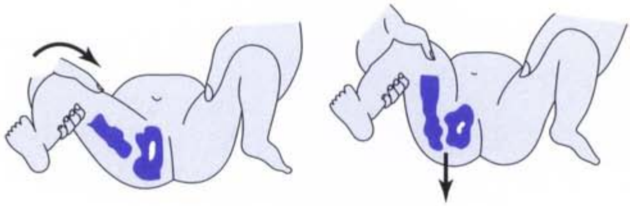
Hips

- Abduct the hips (Ortolani test, detects relocation of a dislocated hip).

- Next, adduct them whilst applying pressure with your thumbs (Barlow test, detects a dislocated hip).



Ortolani test



Barlow test

Figure 35. The Ortolani and Barlow tests

Arms and hands

- Inspect the arms and hands, paying particular attention to the palmar creases (trisomy).
- Count the number of fingers on each hand.

Feet

- Inspect the feet and test their range of movement.
- Count the number of toes on each foot.

Posture and reflexes

- Test head lag by lying the baby supine and pulling up his upper body by the arms.
- Hold the baby prone – the head should lie above the midline.
- Test the Moro reflex by lifting the head and shoulders and then suddenly dropping them back – the arms and legs should abduct and extend symmetrically, and then adduct and flex (NB: some examiners may prefer that you did not test the Moro reflex).
- Test the grasp reflex by placing a finger in the baby's hand.

After the neonatal examination

State that you would also measure and weigh the baby.

Summarise your findings.

Reassure the mother, and tell her that you are going to have the baby examined by a senior colleague.

Station 60
The six-week surveillance review

Specifications: A mannequin in lieu of a baby.

Before starting

- Introduce yourself to the parent.
- Explain the nature of the examination and obtain consent.
- Ask for the parent-held record.

The history

- Ask for the exact age, sex, and preferred name of the child.

Main concerns

- Ask if the parent has any specific concerns.

Past medical history

- Birth history:
  - Pregnancy.
  - Gestation.
  - Delivery.
  - Birth weight.
  - Neonatal history.
- Present health:
  - Current health status.
  - Medication.
  - Social history.

The examination

PART 1 – DEVELOPMENTAL ASSESSMENT

Motor skills

- Symmetrical limb movements.
- Head lag.

Vision and fine movement

- Looks at light/faces.
- Follows an object.

Hearing and language

- Responds to noises/voices.
- Normal cry.
- Ask parent if he/she is concerned about the baby's hearing.

Social behaviour

- Smiles responsively.

PART 2 – PHYSICAL EXAMINATION

Growth

- Weight.
- Length.
- Head circumference.
- Plot findings on a centile chart.

Head

- Palpate the fontanelles.

Face

- Eyes: red reflex, papillary reflexes, and eye movements (squints).
- Ears.
- Mouth – use a pen torch.

Chest

- Feel for the radial and femoral pulses.
- Auscultate the heart.
- Auscultate the lungs.

Back

- Examine the spine, particularly the sacral pit.

Abdomen

- Inspect and palpate the abdomen.
- Examine the external genitalia.

Hips

- Abduct the hips (Ortolani test, see Figure 35).

- Next, adduct them whilst applying pressure with your thumbs (Barlow test, see Figure 35).

After the surveillance review

Discuss your findings with the parent.

Use the opportunity for health promotion, e.g. immunisations, accident prevention, services available for the parents of young children.

Elicit any remaining concerns that the parent may have.

Thank the parent.

Station 61
Paediatric examination: cardiovascular system

If you are asked to examine the cardiovascular system of a younger child (an unlikely event), be prepared to change the order of your examination and to modify your technique as appropriate. For example, you may need to examine the child on his parent's knees or auscultate his heart as soon as he stops crying. As in all paediatric stations, the quality of your rapport with the child will be of considerable importance.

Before starting

Introduce yourself to the child and the parent.

Explain the examination and ask for consent to carry it out.

Position the child at 45 degrees, and ask him to remove his top(s).

Ensure that he is comfortable.

The examination

General inspection

- From the end of the couch, inspect the child carefully, looking for any obvious abnormalities in his general appearance.
- Does the child look his age? Ask to look at the growth chart.
- Is he breathless or cyanosed?
- Look around the child for clues such as a oxygen, PEFR meter, inhalers, etc.
- Inspect the precordium and the chest for any scars and pulsations. A median sternotomy or thoracotomy scar under the axillae may indicate the repair of a congenital heart defect such as a patent ductus arteriosus or a ventricular septal defect.

Inspection and examination of the hands

- Take both hands and assess them for:
  - Colour and temperature.
  - Clubbing.
  - Nail signs.
- Determine the rate, rhythm, and character of both radial pulses (in younger infants, the brachial pulses). Take both femoral pulses at the same time to exclude a radiofemoral delay (coarctation of the aorta).
- Indicate that you would record the blood pressure in both arms. If you are asked to record the blood pressure, remember to use a cuff of appropriate size.

Table 48. Normal pulse rates in children	
Age in years	Pulse (beats per minute)
< 1	100–160
2–4	90–140
4–10	80–140
> 10	65–100

Inspection and examination of the head and neck

- Inspect the conjunctiva for signs of anaemia.
- Inspect the mouth and tongue for signs of central cyanosis.
- Assess the jugular venous pressure (difficult in very young infants).
- Locate the carotid pulse and assess its character.

Palpation of the heart

! Ask the child if he has any pain in the chest.

- Determine the location and character of the apex beat. In children (up to 8 years), this is found in the fourth intercostal space in the mid-clavicular line.
- Palpate the precordium for thrills and heaves.

Auscultation of the heart

! Warm up the diaphragm of your stethoscope.

- Listen for heart sounds, additional sounds, and murmurs. Using the stethoscope's diaphragm, listen in:
  - The *aortic* area.
  - The *pulmonary* area.
  - The *tricuspid* area.
  - The *mitral* area.

(See Station 18, Figure 9.)

- Any murmur heard must be classified according to:
  - Timing.
  - Grading.
  - Site.
  - Radiation.

Innocent murmurs are common in childhood. Innocent murmurs are:

- Systolic.
- Low-grade.
- Heard over only a relatively small area.
- Asymptomatic.

Chest examination

Auscultate the bases of the lungs and check for sacral oedema.

Abdominal examination

Palpate the abdomen to exclude ascities and/or an enlarged liver. Note that the liver edge can usually be palpated in younger infants.

Peripheral pulses

Feel the temperature of the feet, palpate the femoral pulses, and check for pedal oedema.

After the examination

Cover the child.
Ask the child and parent if they have any questions or concerns.
Thank the child and parent.
Indicate that you would test the urine, examine the retina with an ophthalmoscope and, if appropriate, order some key investigations, e.g. a CXR, ECG, echocardiogram.
Summarise your findings and offer a differential diagnosis.

Table 49. Most common conditions likely to come up in a paediatric examination: cardiovascular system station
Ventricular septal defect (VSD)
Patent ductus arteriosus (PDA)
Atrial septal defect (ASD)
Pulmonary stenosis
Aortic stenosis/hypertrophic obstructive cardiomyopathy (HOCM)
Coarctation of the aorta

Station 62
Paediatric examination: respiratory system

If you are asked to examine the respiratory system of a younger child (an unlikely event), be prepared to change the order of your examination and to modify your technique as appropriate. For example, you may need to examine the child on his parent's knees or auscultate his chest as soon as he stops crying. As in all paediatric stations, the quality of your rapport with the child will be of considerable importance.

Before starting

- Introduce yourself to the child and parent.
- Explain the examination and ask for consent to carry it out.
- Position the child at 45 degrees, and ask him to remove his top(s).
- Ensure that he is comfortable.

The examination

General inspection

- From the end of the couch inspect the child carefully, looking for any obvious abnormalities in his general appearance.
- Does the child look his age? Ask to look at the growth chart.
- Is he breathless or cyanosed?
- Is his breathing audible?
- Note the rate, depth, and regularity of his breathing.
- Look around the child for clues such as a PEFR meter, inhalers, etc.

Table 50. Normal respiratory rates in children

Age in years	Respiratory rate (breaths per minute)
Premature infant	40–60
Term infant	30–50
6 years	19–24
12 years	16–21

Look for:

- Deformities of the chest (barrel chest, *pectus excavatum, pectus carinatum*) and spine.
- Asymmetry of chest expansion.
- Signs of respiratory distress such as the use of accessory muscles of respiration, suprasternal, intercostal, and/or subcostal recession, nasal flaring, and difficulty speaking.

- Harrison's sulci.
- Operative scars.

Inspection and examination of the hands

- Take both hands and assess them for colour and temperature.
- Look for clubbing.
- Determine the rate, rhythm, and character of the radial pulse (in younger infants, the brachial pulse).
- State that you would record the blood pressure.

Inspection and examination of the head and neck

- Inspect the conjunctivae for signs of anaemia.
- Inspect the mouth for signs of central cyanosis.
- Assess the jugular venous pressure and jugular venous pulse form.
- Palpate the cervical, supraclavicular, infraclavicular, and axillary lymph nodes.

Palpation of the chest

! **Ask the child if he has any pain in the chest.**

- Palpate for tracheal deviation by placing the index and middle fingers of one hand on either side of the trachea in the suprasternal notch. (As this may be uncomfortable, it is probably best omitted in younger children.)
- Palpate for the position of the cardiac apex.

Note: Carry out all subsequent steps on the front of the chest and, once this is done, repeat them on the back of the chest.

- Palpate for equal chest expansion, comparing one side to the other.
- Palpate for tactile fremitus.

Percussion of the chest

- Percuss the chest. Start at the apex of one lung and compare one side to the other. Do not forget to percuss over the clavicles and on the sides of the chest. Note that percussion of the chest is not useful in young infants.

Auscultation of the chest

! **Warm up the diaphragm of your stethoscope.**

- If old enough, ask the child to take deep breaths through the mouth and, using the diaphragm of the stethoscope, auscultate the chest. Start at the apex of one lung, and compare one side to the other. Are the breath sounds vesicular or bronchial? Are there any added sounds?

After the examination

Cover the child.

Ask the child and parent if they have any questions or concerns.

Thank the child and parent.

Indicate that you would like to look at the sputum pot, measure the PEFR and, if appropriate, order some key investigations, e.g. a CXR, FBC, etc.

Summarise your findings and offer a differential diagnosis.

Table 51. Most common conditions likely to come up in a paediatric examination: respiratory system station
Asthma
Cystic fibrosis
Broncho-pulmonary dysplasia
Pneumonia

Station 63
Paediatric examination: abdomen

Before starting

Introduce yourself to the child and parent.

Explain the examination and ask for consent to carry it out.

Position the child so that he is lying flat and expose his abdomen as much as possible (customarily "nipples to knees", although this is not appropriate in an OSCE setting).

Ensure that he is comfortable.

The examination

General inspection

- From the end of the couch, observe the child's general appearance:
  - Does the child look his age? Ask to look at the growth chart.
  - Nutritional status.
  - State of health/other obvious signs.
- Inspect the abdomen noting any:
  - Distension.
  - Localised masses.
  - Scars and skin changes.
- Look around the child for clues such as oxygen, tubes, drains, etc.

! A distended abdomen is often a normal finding in younger infants.

Inspection and examination of the hands

- Take both hands looking for:
  - Temperature and colour.
  - Clubbing.
  - Nail signs.
- Take the pulse.

Inspection and examination of the head, neck, and upper body

- Inspect the sclera and conjunctivae for signs of jaundice or anaemia.
- Inspect the mouth, looking for ulcers (Crohn's disease), angular stomatitis (nutritional deficiency), atrophic glossitis (iron deficiency, vitamin B12 deficiency, folate deficiency), furring of the tongue (loss of appetite), and the state of the dentition.
- Examine the neck for lymphadenopathy.

Palpation of the abdomen

- Abdominal palpation can be difficult in children if they do not relax the abdominal muscles. Attempt to distract the child by handing him a toy or try to make him relax by coaxing him into palpating his abdomen and then copying his actions.

! **Ask the child if he has any tummy pain and keep your eyes on his face as you begin palpating his abdomen.**

- *Light palpation* – begin by palpating furthest from the area of pain or discomfort and systematically palpate in the four quadrants and the umbilical area. Look for tenderness, guarding, and any masses.
- *Deep palpation* – for greater precision. Describe and localise any masses.

Palpation of the organs

- *Liver* – starting in the right lower quadrant, feel for the liver edge using the flat of your hand. Note that in younger infants the liver edge is normally palpable.
- *Spleen* – palpate for the spleen as for the liver, starting in the right lower quadrant.
- *Kidneys* – position the child close to the edge of the bed and ballot each kidney using the technique of deep bimanual palpation. Beyond the neonatal period, it is unlikely that you should be able to feel a normal kidney.

Percussion

- Percuss the liver area, also remembering to detect its upper border.
- Percuss the suprapubic area for dullness (bladder distension).
- If the abdomen is distended, test for shifting dullness (ascites).

Auscultation

- Auscultate in the mid-abdomen for abdominal sounds. Listen for 30 seconds at least before concluding that they are hyperactive, hypoactive, or absent.

Examination of the groins and genitalia

- Inspect the groins for hernias and, in boys, examine the testes (this is particularly important in younger infants).
- Note that examination of the groins and genitalia may only need to be mentioned, as it is not usually carried out in the OSCE setting.

Rectal examination

- PR is not routine practice in paediatrics and should be avoided unless specifically indicated.

After the examination

Ask to test the urine.

Cover the child.

Ask the child and parent if they have any questions or concerns.

Indicate that you would test the urine and order some key investigations, e.g. ultrasound scan, FBC, LFTs, U&Es, and clotting screen.

Thank the child and parent.

Summarise your findings and offer a differential diagnosis.

Table 52. Most common conditions likely to come up in a paediatric examination: abdomen station
Constipation
Coeliac disease
Kidney transplant

Station 64
Paediatric examination: gait and neurological function

Before starting

Introduce yourself to the child and parent.

Tell the child that you are going to examine him.

Ensure that he is comfortable.

! **Examination of neurological function in children is principally a matter of observation. If the child is old enough to obey commands, a more formal assessment of gait and neurological function can be carried out, as in adults.**

The examination

Neurological overview

- A brief developmental assessment should be performed to enable you to gauge the child's subsequent performance. Ask the parent the child's age and if there are any concerns about the child's vision and/or hearing.

Gait and movement

- If the child is too young to walk, observe him crawling or playing. Is he using all his limbs equally?
- If possible, observe the child walking and running. Common abnormalities of gait in children include:
  - Scissoring or tiptoeing gait – suggestive of cerebral palsy or of Duchenne muscular dystrophy.
  - Broad-based gait: suggestive of a cerebellar disorder.
  - Limp – limps have many causes including dislocated hip, trauma, sepsis, and arthritis.
- If possible, observe the child rising from the floor. The Gower sign (the child rising from the floor by "climbing" up his legs) is suggestive of Duchenne muscular dystrophy.

Inspection

- Inspect all four limbs, in particular looking for muscle wasting or hypertrophy. Hypertrophy of the calves is suggestive of Duchenne muscular dystrophy.

Tone

- Assess tone and range of movement in all four limbs.

- In younger children also assess truncal tone by trying to get the child to sit unsupported.
- In young infants test head lag by lying the infant supine and pulling up his upper body by the arms.

Power

- Observe the child playing, and look for appropriate anti-gravity movement. A more formal assessment can be carried out if the child is old enough to carry out instructions.

Reflexes

- Check all reflexes as in the adult. Practice is the key!
- Note that eliciting the Babinsky sign (extensor plantar reflex) is not very discriminative in children.

Co-ordination

- If the child is old enough to carry out instructions, assess co-ordination by the finger-to-nose test or just by asking the child to jump or hop. If the child cannot carry out instructions, give him toys or some bricks and assess his co-ordination by observing him at play.

Sensation

- Indicate that you would test sensation.

Cranial nerves

- Indicate that you would test the cranial nerves – where possible this is done as in the adult.

After the examination

Thank the parent and child.

If appropriate, indicate that you would order some key investigations, e.g. CT, MRI, nerve conduction studies, electromyography, etc.

Summarise your findings and offer a differential diagnosis.

Table 53. Most common conditions likely to come up in a paediatric examination: gait and neurological function station
Ex-premature infant
Cerebral palsy
Duchenne muscular dystrophy
Myotonic dystrophy

Station 65
Infant and child Basic Life Support

Sepcifications: A mannequin in lieu of an infant or child.

Note: For the purposes of Basic Life Support, an infant is defined as being under 1 year, and a child as being between 1 year and puberty.

- Ensure the safety of the rescuer and child
- Check the child's responsiveness by gently stimulating the child and asking loudly, "Are you all right?"

! Do not shake infants or children with suspected cervical spine injuries.

- If the child responds by answering or moving:
  - Leave the child in the position in which you find him (provided he is not in further danger).
  - Check his condition and get help if needed.
  - Reassess him regularly.
- If the child does not respond:
  - Shout for help.
  - Open the child's airway by using the head-tilt, chin-lift technique (see Station 93). If you have difficulty opening the airway using the head-tilt, chin-lift technique, try the jaw-thrust technique (see Station 94). Both methods may be easier to carry out if the child is turned onto his back.

! If you suspect that there may have been injury to the neck, try to open the airway using chin lift or jaw thrust alone. If this is unsuccessful, add head tilt a small amount at a time until the airway is open.

- Holding the child's airway open, put your face close to his mouth and look along his chest. *Listen, feel*, and *look* for breathing for no more than 10 seconds.
- If the child is breathing normally:
  - Turn him into the recovery position.
  - Check for continued breathing.
- If he is not breathing normally or is making agonal gasps (infrequent, irregular breaths):
  - Carefully remove any obvious airway obstruction.
  - Give 5 initial rescue breaths.
- While performing the rescue breaths, note any gag or cough response to your action.
- To deliver rescue breaths to a child over 1 year:
  - Ensure head tilt and chin lift.

- Pinch the soft part of his nose closed with the index finger and thumb of the hand on his forehead.
- Allow his mouth to open, but maintain chin lift.
- Take a breath and place your lips around his mouth, making sure that you have a good seal.
- Blow steadily into his mouth over 1–1.5 seconds, watching for his chest to rise.
- Maintaining head tilt and chin lift, take your mouth away from the victim and watch for his chest to fall.
- Take another breath and repeat this sequence 5 times.

- To deliver rescue breaths to an infant:
  - Ensure a neutral position of the head and apply chin lift.
  - Take a breath and cover the mouth and nasal apertures of the infant with your mouth, making sure you have a good seal.
  - Blow steadily into the infant's mouth and nose over 1–1.5 seconds so that the chest rises visibly.
  - Maintaining head tilt and chin lift, take your mouth away from the victim and watch for his chest to fall.
  - Take another breath and repeat this sequence 5 times.
- If you have difficulty achieving an effective breath, the airway may be obstructed.
  - Open the child's mouth and remove any visible obstruction.
  - Ensure that there is adequate head tilt and chin lift, but also that the neck is not over extended.
  - If the head-tilt, chin-lift method has not opened the airway, try the jaw thrust method.
  - Make 5 attempts to achieve effective rescue breaths. If still unsuccessful, move on to chest compression.
- Check for signs of a circulation (signs of life).
- Take no more than 10 seconds to check for signs of circulation such as movement, coughing, or normal breathing (but not agonal gasps).
- Check the pulse but take no longer than 10 seconds to do this. In a child check the carotid pulse, in an infant check the brachial pulse.
- If you are confident that you have detected signs of circulation:
  - Continue rescue breathing, if necessary, until the child starts breathing effectively on his own.
  - Turn the child into the recovery position if he remains unconscious.
  - Reassess the child frequently.

- If there are no signs of a circulation,

  or no pulse,

  or a slow pulse (less than 60 per minute with poor perfusion),

  or you are not sure,
- start chest compression. To deliver chest compressions to all children, compress the lower third of the sternum.
  - Locate the xiphisternum and compress the sternum one finger's breadth above this.
  - Compress the sternum by approximately one third of the depth of the chest. In infants, use the tips of two fingers or, if there are two or more rescuers, use the encircling technique with two thumbs. In children, use the heel of one hand or, in larger children, the heels of both hands, as in adults.
  - Aim for a rate of 100 compressions per minute.
- After 15 compressions, tilt the head, lift the chin, and give two effective breaths.
- Continue compressions and breaths in a ratio of 15:2 (lone rescuers may use a ratio of 30:2).
- Continue resuscitation until the child shows signs of life (spontaneous respiration, pulse, movement) or further help arrives or you become exhausted.

When to go for assistance

- If more than one rescuer is present, one rescuer begins resuscitation whilst another goes for assistance.
- If only one rescuer is present, he should undertake resuscitation for 1 minute before going for assistance. It may be possible for him to carry the infant or child whilst going for assistance.
- The exception to this rule is in the case of a child with a witnessed, sudden collapse when the rescuer is alone. In this case the cause is likely to be an arrhythmia and the child may need defibrillation. Go for assistance immediately if there is no one to go for you.

Adapted from Resus Council (UK), 2005 Guidelines.

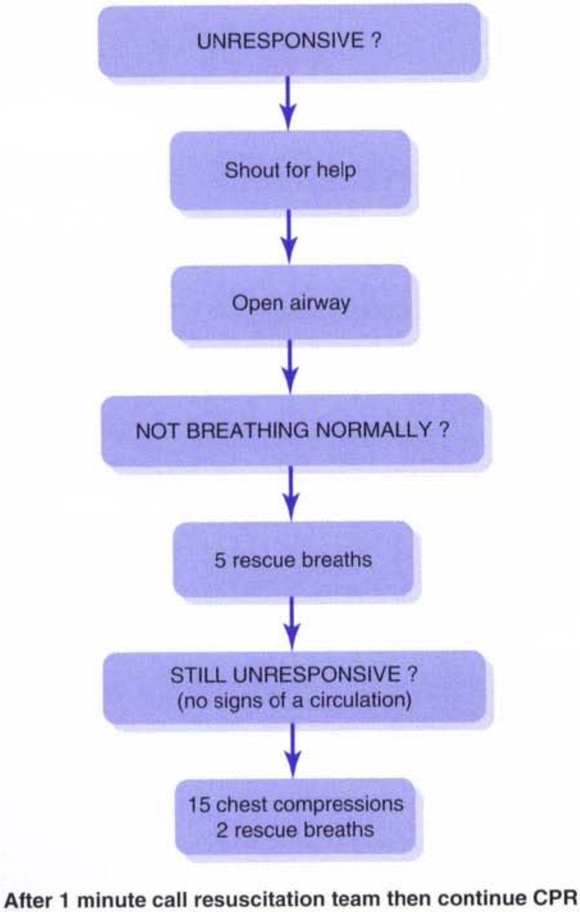


Figure 36. Paediatric Basic Life Support algorithm

Station 66
Child immunisation programme

The instructions for this station may involve explaining the immunisation programme to a parent, or talking to an anxious parent about the pros and cons of the MMR vaccine. This station covers the facts, see *Station 106: Explaining skills* for the method.

Table 54. The UK Immunisation schedule

Age	Vaccine	Specifications
Birth	BCG	If at risk of tuberculosis
2 months	DTP triple vaccine • diphtheria • tetanus • pertussis Hib Polio Meningococcus type C	One injection (DTP triple vaccine, Hib, Polio) One injection (Meningococcus type C)
3 months	As for 2 months	
4 months	As for 2 months	
12–15 months	MMR • measles • mumps • rubella	One injection
3½ years (preschool age)	Diphtheria Tetanus Pertussis Polio MMR	Boosters
10–14 years	BCG	If indicated by Heaf testing
16 years (school leavers)	Diphtheria Tetanus Polio	Boosters

The MMR controversy

- Measles can cause pneumonia, fits, encephalitis, sub-acute sclerosing panencephalitis, and death.
- Mumps can cause meningitis, encephalitis, deafness, and sterility.
- Rubella in pregnancy can cause severe damage to the foetus.
- The MMR vaccine is safe and effective, and more than 500 million doses of the vaccine have been given since 1972.
- Common side-effects of the MMR vaccine are a sore injection site and flu-like symptoms. Very rarely, an allergic reaction can occur.
- There is no evidence to support a distinct syndrome of MMR-induced autism or inflammatory bowel disease.
- Separate administration of the measles, mumps, and rubella vaccines provides no added benefit over administration of the combined MMR vaccine, but means three injections and potentially delayed or missed vaccinations.

Geriatrics

Station 67
Geriatric history

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to determine the nature of his problems, and ask for his consent to do this.

Ensure that he is comfortable; if not, make sure that he is.

Ask if you can take a collateral history from a caretaker.

The history

- Name, age, and past occupation if this information has not already been provided.

Presenting complaint

- Enquire about the presenting complaint, if any. Use open questions and active listening.
- Elicit the patient's ideas, concerns, and expectations.
- Enquire about the effects that his symptoms are having on his life.

Then aim to cover:

- Physical independence, e.g. describe a typical day.
- Functional assessment: can he stand up and walk, climb the stairs, get on and off the toilet, get in and out of the bathtub, dress, cook/clean/shop, and manage his finances and administration?
- Living arrangements: housing, heating, lighting, stairs, toileting, slippery bathtubs, loose rugs, cooker and smoke alarm, adaptive or home safety aids, e.g. grab bars in the bathroom, stair lift, raised toilet seat, shower stool, bedside commode, etc.
- Carers and support services.
- Social interaction: family, friends, clubs, etc. If appropriate, ask *Who will help you if you become ill? Who should make decisions for you if you become too ill to speak for yourself?*
- Daily diet, including nausea, vomiting, and change in appetite or weight.
- Mood (e.g. *How are you keeping in your spirits?*). Also ask about sleep and appetite.
- Memory and cognitive impairment.
- Dizziness/falls (see *Station 36: History of "funny turns"*).
- Vision (corrective aids, accidents, difficulty reading, feeding, dressing, grooming, driving, and recognising pills or items).

- Urinary and faecal incontinence.
- Smoking and alcohol use.

Past medical history

- Current, past, and childhood illnesses. Ask about rheumatic fever and polio.
- Surgery.

Drug history

- Prescribed medication and *compliance*.
- Over-the-counter drugs.
- Allergies.

Family history

- Parents, siblings, and children. Ask specifically about diabetes, Alzheimer's disease, and cancer.

After taking the history

Ask the patient if there is anything that he might add that you have forgotten to ask about.

Ask if he has any questions or concerns.

Thank him.

Indicate that you would like to examine the patient and order some investigations.

Formulate a problem list and suggest treatment options.

Station 68
Geriatric physical examination

Examining a patient in old age (>65 years old) is very similar to examining a patient at any other age. If asked to examine a patient in old age, important features to look out for or aspects to consider are:

Vital signs

Temperature, pulse, blood pressure (lying and standing), respiratory rate, height, weight.

General inspection

Nutritional status, posture, tremor, gait, aids

Skin

Pressure sores, senile keratoses, senile purpura, bruises, pre-malignant or malignant lesions.

Eyes, ears, nose and throat

Vision (including fundoscopy), hearing, mouth, throat.

Musculoskeletal system

Arthritis, muscle wasting, contractures, range of motion in different joints.

Cardiovascular system

Arrhythmias, added sounds, murmurs, carotid bruits, pedal oedema, absent peripheral pulses, gangrene.

Respiratory system

Chest expansion, basal crackles (may be difficult to hear because of basilar rales).

Abdomen

Organomegaly, bladder distension, abdominal aortic aneurysm, frequency and quality of abdominal sounds, rectal examination.

Breast and genitourinary

Malignancy.

Neurological examination

Tone, power, sensation, reflexes, gait, co-ordination.

Dermatology

Station 69
Dermatological history

Before starting

- Introduce yourself to the patient.
- Explain that you are going to ask him some questions to uncover the nature of his skin problem, and ask for his consent to do this.
- Ensure that he is comfortable; if not, make sure that he is.

The history

- Name and age.

Presenting complaint

- Use an open question to ask the patient to describe his skin problem.

History of presenting complaint

Ask about:

- When, where, and how the problem started.
- What the initial lesions looked like and how they have evolved.
- Symptoms: especially, pain, pruritus, and bleeding.
- Aggravating factors such as sunlight, heat, soaps, etc.
- Relieving factors, including any treatments so far.
- Effect on everyday life.
- Details of previous episodes, if any.

Past medical history

- Previous skin disease.
- Atopy (asthma, allergic rhinitis, childhood eczema).
- Present and past medical illnesses.
- Surgery.

Drug history

- Prescribed and OTC/complementary medications, including topical applications such as gels and creams (including in the recent past).
- Cosmetics and moisturising creams (including in the recent past).
- Relationship of symptoms to use of medication.
- Allergies.

Family history

- Has anyone in the family had a similar problem?
- Medical history of parents, siblings, and children, focusing on skin problems.
- Sexual contacts.

Social history

- Occupation (in some detail, e.g. potential exposure to chemicals, similar symptoms in one or more colleagues). Does the skin problem improve during holiday periods?
- Hobbies (in some detail).
- Home circumstances.
- Alcohol use.
- Recent travel, especially to the tropics.

Systems review

(If appropriate.)

After taking the history

Ask the patient if there is anything that he might add that you have forgotten to ask about.

Thank the patient.

Summarise your findings and offer a differential diagnosis.

State that you should next like to carry out a dermatological examination.

Station 70
Dermatological examination

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ask him to undress to his undergarments.

Ensure that he is comfortable.

Ask him to report any pain or discomfort during the examination.

Ensure that there is adequate lighting.

The examination

- Describe the distribution of the lesions: are they generalised or localised, symmetrical or asymmetrical, affecting only certain areas, e.g. flexor or extensor surfaces. Make a point of looking at all parts of the body.
- Describe the morphology of the individual lesions, commenting upon their colour, size, shape, borders, elevation, and spatial relationship. Use precise dermatological terms. A glossary of dermatological terms can be found on the Molson Medical Informatics Student Projects website at http://sprojects.mmi.mcgill.ca/dermatology/terminology.htm.
- Note any secondary skin lesions such as scaling, lichenification, crusting, excoriation, erosion, ulceration, and scarring.
- Palpate the lesions (ask the patient if this is OK first). Assess their consistency. Do they blanch?
- Examine the finger nails and toe nails.
- Examine the hair and scalp.
- Examine the mucous membranes.
- Check for lymphadenopathy, if appropriate.
- Check the pedal pulses, if appropriate.

After the examination

If appropriate, offer to help the patient to put his clothes back on.

Thank the patient.

Ensure that he is comfortable.

Wash your hands.

Summarise your findings and offer a differential diagnosis.

Table 55. Most common conditions likely to come up in a skin examination station
Psoriasis
Eczema
Contact dermatitis
Acne vulgaris
Erythema nodosum
Malignant melanoma
Basal cell carcinoma
Squamous cell carcinoma

Station 71
Advice on sun protection

Read in conjunction with *Station 106: Explaining skills.*

Before starting

Introduce yourself to the patient.

Tell him what you are going to explain, and determine how much he already knows.

The advice

Explain that there are three types of ultra violet radiation from the sun: UVA, UVB, and UVC.

- UVA and UVB can cause skin cancer.
- UVC does not reach the surface of the earth and is therefore of no concern.

Explain that, other than causing skin cancer, UV radiation can also cause the skin to burn and (horror!) to age prematurely.

UV levels depend on a number of factors such as the time of day, time of year, latitude, altitude, cloud cover, and ozone cover.

Explain that there are four principal methods of protecting against the sun's rays:

1. Avoid the outdoors. The sun's rays are most direct around midday and so one should avoid being outdoors from around 11 am to 3 pm.
2. Seek shade.
3. Cover up (clothing should include a wide-brimmed hat and sunglasses that conform to British Standard 2724).
4. Use sunscreen.
   - A sunscreen's star rating is a measure of its level of protection against UVA.
   - A sunscreen's sun protection factor is a measure of its level of protection against UVB.
   - Use a sunscreen that has a star rating of at least three stars *** and an SPF of at least 15.
   - The sunscreen should be applied thickly over all sun-exposed areas, and re-applied regularly.

It is important that you explain that sunscreens should not simply be used as a means of spending more time in the sun.

Finally advise the patient to report any moles that change in size, shape, colour, or texture.

After giving the advice

Summarise the information and ensure that the patient has understood it.

Tell them that, if anything, they can remember "Slip, slap, slop" – slip on some clothes, slap on a hat, and slop on sunscreen.

Ask the patient if he has any questions or concerns.

Give the patient a leaflet on sun protection.

Obstetrics, gynaecology, and sexual health

Station 72
Obstetric history

Specifications: You may be asked to focus on only a certain aspect or certain aspects of the obstetric history.

Before starting

Introduce yourself to the patient.

Explain that you are going to ask her some questions to uncover the nature and background of her obstetric complaint, and ask for consent to do this.

Ensure that she is comfortable.

The history

- Name, age, and occupation.

Presenting problem (presenting complaint)

Ask about the presenting problem (if any) in some detail.

History of the present pregnancy

- Determine the duration of gestation and calculate the expected due date (EDD):
  - Ask about the date of the patient's last menstrual period (LMP).
  - Ask if her periods had been regular prior to her LMP.
  - Ask if she had been on the oral contraceptive pill (OCP). If yes, determine when she stopped taking it and the number of periods she had before becoming pregnant.
  - Determine the duration of gestation and calculate the EDD. To calculate the EDD add 9 months and 7 days to the date of the LMP. If this proves too arduous a task, try adding one year, subtracting three months, and adding 7 days.
- Ask about foetal movements and, if present, about any changes in their frequency.
- Take a detailed history of the pregnancy, enquiring about:

First trimester:

  - Date and method of pregnancy confirmation.
  - Was the pregnancy planned or unplanned? If it was unplanned, is it desired?
  - Symptoms of pregnancy (e.g. sickness, indigestion, headaches, dizziness...).
  - Bleeding during pregnancy.
  - Ultrasound scan (10–12/52).
  - Chorionic villus sampling (10–13/52).

- Type of antenatal care (e.g. shared care, midwife-led care, domino scheme, consultant-led scheme).

Second trimester:

- Amniocentesis (16–18/52).
- Anomaly scan (18–20/52).
- Quickening (16–18/52).

Third trimester:

- Antenatal clinic findings. You *must* ask about blood pressure and proteinuria.
- Hospital admissions.

History of previous pregnancies (past reproductive history)

Ask her if she has any children.

For each previous pregnancy, ask about:

The pregnancy:

- The date (year) of birth.
- The duration of the pregnancy and any problems.
- The mode of delivery and any problems.
- The outcome.

The child:

- The child's birth weight.
- Problems after birth.
- The child's present condition.

! **Do not forget to also ask about miscarriages, stillbirths, and terminations.**

Gynaecological history

Take a focussed gynaecological history, and ask about the date and result of the last cervical smear test.

Past medical history

- Current, past, and childhood illnesses.
- Surgery.
- Recent visits to the doctor.

Drug history

- Prescribed medication.
- Over-the-counter drugs.
- Smoking.
- Alcohol use.
- Recreational drug use.
- Allergies.

Family history

- Parents, siblings, and children. Has anyone in the family ever had a similar problem?
- Is there a family history of hypertension, heart disease, or diabetes?
- *Is there a history of twins or triplets in your family or in your partner's family?*

Social history

- Support from the partner and/or family.
- Employment.
- Income and financial support.
- Housing.

After taking the history

Ask the patient if there is anything she might add that you have forgotten to ask about.

Thank the patient.

If asked, summarise your findings and offer a differential diagnosis.

Station 73
Examination of the pregnant woman

Specifications: Most likely an anatomical model in lieu of a patient.

Before examining the patient

Introduce yourself to the patient.

Explain the examination and ensure consent.

Indicate that you would weigh the patient, take her blood pressure (pre-eclampsia), dipstick her urine (pre-eclampsia, gestational diabetes) and ask her to empty her bladder.

Position the patient so that she is lying supine (she can sit up if she finds lying supine uncomfortable).

Ask her to expose her abdomen.

Ensure that she is comfortable.

The examination

General inspection

Carry out a general inspection from the end of the couch.

Inspection of the abdomen

- Abdominal distension and symmetry.
- *Linea nigra.*
- *Striae gravidarum.*
- Scars.

Palpation of the abdomen

Facing the mother, determine the:

- Size of the uterus.
- Liquor volume (normal, polyhydramnios, oligohydramnios).
- Number of foetuses.
- Size of the foetus(es).
- Lie.
- Presenting part.

Turning to face the mother's feet, determine the:

- Engagement.

Table 56. Some important obstetric definitions
Lie. The relationship of the long axis of the foetus to that of the uterus, described as longitudinal, transverse, or oblique
Presenting part. The part of the foetus that is in relation with the pelvic inlet, e.g. cephalic/breech for a longitudinal lie or shoulder/arm for a transverse/oblique lie
Engagement. During engagement, the presenting part descends into the pelvic inlet in readiness for labour. Engagement is usually described in fifths of head palpable above the pelvic inlet, although sometimes the presenting part may not be the head

Although not usually performed, indicate that you could also determine the position, station, and attitude of the foetus.

Symphyseal–fundal height (SFH)

Using a tape measure, measure from the mid-point of the symphysis pubis to the top of the uterus. From 20 to 38 weeks of gestation, the SFH in centimetres approximates to the number of weeks of gestation $\pm$ 2.

Auscultation

Listen to the foetal heart by placing a Pinard stethoscope over the foetus' anterior shoulder and estimate the heart rate (usually 110–160 bpm). Ensure that your hands are free from the abdomen.

After the examination

Cover the patient up.
Thank the patient.
Summarise your findings.

Station 74
Gynaecological history

Specifications: You may be asked to circumscribe your questioning to certain aspects of the gynaecological history only.

Before starting

Introduce yourself to the patient.

Explain that you are going to ask her some questions to uncover the nature and background of her gynaecological complaint, and ask for her consent to do this.

Ensure that she is comfortable.

The history

- Name, age, and occupation.

Presenting complaint and history of presenting complaint

- Enquire in detail about the nature of the presenting complaint and the history of the presenting complaint. First listen to the patient. Then ask about:
  - Age at menarche.
  - Regularity of the menses.
  - Dysmenorrhoea.
  - Date of LMP. Did the LMP seem normal?
  - Vaginal discharge. If there is a vaginal discharge, ask about its amount, colour, and smell. Is it causing the patient to itch?
  - Date and result of the last cervical smear test.
  - Vaginal prolapse.
  - Urinary incontinence.
  - Coitus, present or past. (*Are you sexually active?*)
  - Dyspareunia.
  - Use of contraception.

Past medical history

- Past gynaecological history.
- Past reproductive history: previous pregnancies in chronological order, including terminations and miscarriages.
- Past medical history:
  - Current, past, and childhood illnesses.
  - Surgery.
  - Recent visits to the doctor.

Drug history

- Prescribed medication.
- Over-the-counter medication.
- Recreational drug use.
- Allergies.

Family history

- Ask about parents, siblings, children. Has anyone in the family had a similar problem? In the case of a suspected STD, don't forget to ask about the partner.

Social history

- Employment.
- Housing and home-help.
- Travel.
- Smoking.
- Alcohol use.

After taking the history

Ask the patient if there is anything she might add that you have forgotten to ask about.

Thank the patient.

Summarise your findings and offer a differential diagnosis.

Station 75
Gynaecological (bimanual) examination

Specifications: A pelvic model in lieu of a patient.

Before starting

Introduce yourself to the patient.

Explain the examination, reassuring the patient that, although it may feel uncomfortable, it should not cause any pain.

Obtain consent.

Ask for a chaperone.

Confirm that the patient has emptied her bladder.

Indicate that you would normally carry out an abdominal examination prior to a gynaecological examination.

Once undressed, ask the patient to lie flat on the couch, bringing her heels to her buttocks and then letting her knees flop out.

Ensure that she is comfortable, and cover her up with a drape.

The examination

! **Always tell the patient what you are about to do.**

- Don a pair of non-sterile gloves.
- Inspect the vulva, paying close attention to:
  - The pattern of hair distribution.
  - The labia majora.
  - The clitoris.
- Palpate the labia majora.
- Try to palpate Bartholin's gland (the structure is not normally palpable).
- Lubricate the index and middle fingers of your gloved right hand.
- Use the thumb and index finger of your left hand to separate the labia minora.
- Insert the index and middle fingers of your right hand into the vagina at an angle of 45 degrees.
- Palpate the vaginal walls.
- Use your fingertips to palpate the cervix. Assess the cervix for size, shape, consistency, and mobility. Is the cervix tender? Is it open?
- Palpate the uterus: place the palmar surface of your left hand about 5 cm above the symphysis pubis and the internal fingers of your right hand behind the cervix and gently try to appose your fingers in an attempt to "catch" the uterus. Assess the uterus for size, position, consistency, mobility, and tenderness. Can you feel any masses?

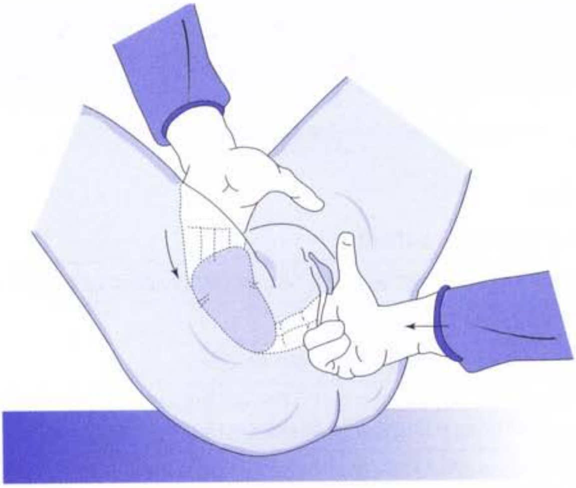


Figure 37. Technique for bimanual examination

- Palpate the right adnexae: place the palmar surface of your left hand in the right iliac fossa and the internal fingers of your right hand in the right fornix and gently try to appose your fingers in an attempt to "catch" the ovary. Can you elicit excitation tenderness? (Look at the patient's face.)
- Use a similar technique for palpating the left adnexae.
- Once you have removed your internal fingers, inspect the glove for any blood or discharge.

After the examination

Indicate that you could also have carried out a speculum examination and taken a cervical smear (see *Station 76: Cervical smear test*).

Offer the patient a box of tissues and give her the opportunity to dress.

Thank the patient.

Ensure that she is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 57. Most common conditions likely to come up in a gynaecological examination station
Uterine fibroids
Ovarian cyst

Station 76
Cervical smear test and liquid based cytology test

Specifications: An anatomical model in lieu of a patient.

Before starting

Introduce yourself to the patient.

Explain the procedure to her, and ask her for her consent to carry it out.

Request a chaperone.

Confirm that the patient has emptied her bladder.

Once undressed, ask the patient to lie flat on the couch, bringing her heels to her buttocks and then letting her knees flop out.

Ensure that she is comfortable, and cover her up with a drape.

Gather the appropriate equipment.

The equipment

On a trolley, gather:

- Non-sterile gloves.
- Ayres spatula.
- Fixative spray (or 95% alcohol).
- Bivalve speculum.
- Brush, if post-menopausal.
- Labelled slides (name, date of birth, hospital number).

The procedure

- Indicate that you would record the patient's name, date of birth, and hospital number on the slide.
- Adjust the light source to ensure maximum visibility.
- Don the pair of gloves.
- Warm the speculum's blades in your palm.
- Place a small amount of K-Y jelly on either side of the speculum near the tip.
- With your non-dominant hand, part the labia to ensure all hair and skin are out of the way.
- With your other hand, slowly but gently, insert the speculum with the screw facing sideways, rotating it into position (screw upwards) and then opening it.

- Place the back of your non-dominant hand against her pubic area and gently open the speculum to identify the cervix.
- Fix the speculum in the open position by tightening the screw.

! A smear should not be taken if there is any bleeding or vaginal discharge.

- Place the tip of the Ayres spatula in the external os and rotate the spatula by 360 degrees in either direction, all the while keeping it firmly applied to the cervix.
- Spread the material thus obtained evenly onto the labelled slides.
- Immediately spray fixative onto the slides.
- Carefully remove the speculum. Hold the speculum in the open position and completely unscrew it. Then remove the speculum slowly allowing it to close naturally as you withdraw it.

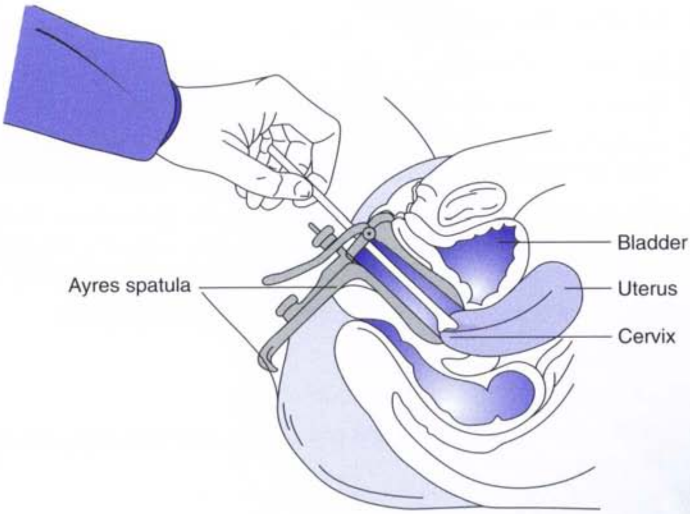


Figure 38. The cervical smear test

After the procedure

Dispose of the speculum and of the gloves.

Offer the patient a box of tissues and give her the opportunity to dress.

Warn her about the possibility of spotting/bleeding after the test.

Explain to her when and how she will receive the test results, the possible outcomes, and when her next screening test is (i.e. 3 yearly if between 25 and 49 years of age, or 5 yearly if between 50 and 64 years of age).

Ask the patient if she has any questions or concerns.

Thank the patient.

Liquid based cytology test

Liquid based cytology (LBC) is a new method of preparing cervical samples for examination in the laboratory. It is currently being introduced and is soon to replace the conventional cervical smear test. If asked to perform an LBC test you must gather a pair of non-sterile gloves, a cervical examination brush (Cervex-Brush®), a vial containing preservative fluid, a bivalve speculum, and some K-Y jelly. Then you must carry out the following steps, the first four of which are similar to those outlined above:

- Check the expiry date on the sample collection vial and record the patient's name, date of birth and hospital number on both the vial and cytology request form.
- Adjust the light source.
- Don the pair of gloves.
- Warm, lubricate, and insert the speculum (see above).
- Insert the central bristles of the cervical brush into the endocervical canal and rotate it by 360 degrees in a clockwise direction five times.
- Immediately rinse the cervical brush in the preservative fluid by pushing it into the bottom of the vial ten times, forcing the bristles apart. Then swirl the brush vigorously to further release material.
- Inspect the cervical brush to ensure that it is free of material.
- Discard the brush.
- Carefully remove the speculum (see above).
- Tighten the cap on the vial and place it in a specimen bag, along with the request form.

Station 77
Breast history

Before starting

Introduce yourself to the patient.

Explain that you are going to ask her some questions to uncover the nature of her complaint, and ask for her consent to do this.

Ensure that she comfortable; if not, ensure that she is.

The history

- Name, age, and occupation, if this information has not already been provided. Is the patient pregnant or lactating?

Presenting complaint and history of presenting complaint

- Use open questions to ask about the presenting complaint.
- Ask specifically about pain, a lump in the breast, and nipple discharge.

For pain, determine:

- Site.
- Severity.
- Nature.
- Onset.
- Duration.
- Aggravating and alleviating factors.
- Associated signs and symptoms:
    - Locally, e.g. lump, discharge, bleeding, skin changes, nipple retraction/ inversion.
    - Systemically, e.g. tiredness, fever, night sweats, weight loss, chest or back pain.
- Cyclicity.
- If the patient has had it before.
- Any other changes in the breast.

For a lump in the breast, determine:

- Site.
- Size.
- Onset.
- Duration.
- Cyclicity.

- Associated symptoms:
  - Locally, e.g. pain, discharge, bleeding, skin changes, nipple retraction/inversion.
  - Systemically, e.g. tiredness, fever, night sweats, weight loss, chest or back pain.
- If the patient has had it before.

For nipple discharge, determine:

- Amount.
- Colour.
- If it is unilateral or bilateral.
- If it is from one duct or several.
- If it is spontaneous.
- Associated symptoms:
  - Locally, e.g. pain, lump, bleeding, skin changes, nipple retraction/inversion.
  - Systemically, e.g. tiredness, fever, night sweats, weight loss, chest or back pain.
- If the patient has been breast-feeding.
- If the patient has had it before.

Past medical history

- Age at menarche and (if applicable) menopause. Does the patient have any children? How old are they? Did she breast-feed them?
- Current, past, and childhood illnesses.
- Surgery.
- Previous breast investigations.
- Recent visits to the doctor.

Drug history

- Prescribed medication, especially oral contraceptives and HRT. Note that certain drugs, e.g. antipsychotics, can cause hyperprolactinaemia and galactorrhoea.
- Over-the-counter medications.
- Recreational drug use.
- Allergies.

Family history

- Parents, siblings, and children. Ask specifically about breast problems and cancers.

Social history

- Smoking.
- Alcohol use.
- Employment, past and present.
- Housing.
- Hobbies.

Systems enquiry

(If appropriate.)

After taking the history

Ask the patient if there is anything that she might add that you have forgotten to ask about.

Thank the patient.

Summarise your findings and offer a differential diagnosis.

State that you would like to examine the patient and possibly order some investigations, e.g. mammogram, ultrasound scan, fine-needle aspiration cytology (FNAC), to confirm your diagnosis.

Table 58. Most common conditions likely to come up in breast history station
Fibroadenoma
Fibrocystic disease
Mastitis
Breast abscess
Mammary duct ectasia
Carcinoma
Intraductal papilloma

Station 78
Breast examination

Specifications: In this station you may be asked to examine a patient wearing synthetic breasts. You may also be asked to take a brief history beforehand.

A full breast examination involves inspection, palpation of the breast tissue, palpation of the nipple, and palpation of the lymph nodes.

Before starting

Introduce yourself to the patient.
Explain the examination, and ask her for consent to carry it out.
Request a chaperone.
Ask her to undress from the waist up and hand her a drape or blanket to cover herself up with.
Ask her to sit on the edge of the couch, and ensure that she is comfortable.

The examination

General inspection

- From a distance, observe the patient's general appearance (age, state of health, any obvious signs).

Inspection of the breasts

- Note the size, symmetry, contour, and colour of the breast; also note the pattern of venous drainage. In particular, look for the important signs of nipple inversion or retraction and *peau d'orange* (breast carcinoma). Is there a visible discharge? Are there any scars? Also remember to look under the breasts (ask the patient to lift up her breasts for you).
- Now ask the patient to put her hands atop her head and then to press them against her hips. Look for tethering and asymmetrical changes in the breast contour.

Palpation of the breasts

- Ask the patient to sit back on the couch, reclining at 45 degrees.
- Warm up your hands.
- Before palpating the breasts, ask if there is any breast or chest pain.
- Starting with the normal breast, palpate the breast tissue with the palmar surface of the middle three fingers, using an even rotary movement to compress the breast tissue gently towards the chest wall. If the breasts are large, use one hand to steady the breast on its lower border.
- Examine each breast following a concentric trail.

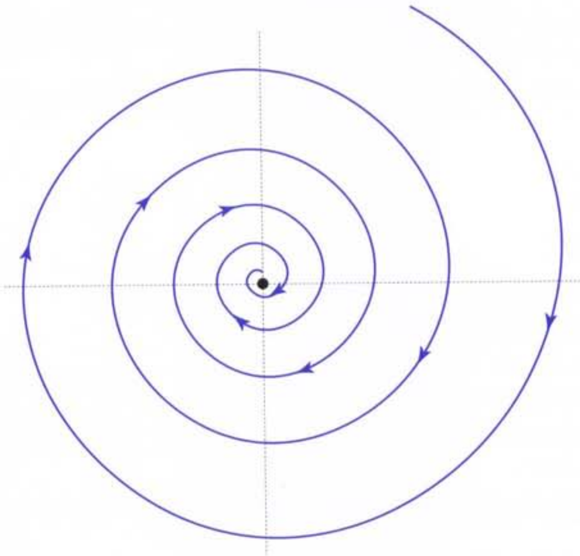


Figure 39. The circular palpation technique. Other palpation techniques include the vertical strip and wedge techniques

- Ask the patient to put her hands atop her head and palpate the tail of Spence between thumb and forefinger.

Assess any lump for size, shape, consistency, mobility, surface, temperature, and tenderness.

! Don't forget that there are two breasts that need examining, a common enough oversight in the artificial and anxiety-provoking OSCE situation.

Palpation of the nipple

- Hold the nipple between thumb and forefinger and gently compress it in an attempt to express a discharge (or ask the patient to do this). A discharge could signify normal lactation, galactorrhoea, duct ectasia, a carcinoma, or an intraductal papilloma. Any fluid expressed should be smeared for cytology and swabbed for microbiology.

Palpation of the lymph nodes

- Expose the right axilla by lifting and abducting the arm and supporting it at the wrist with your right hand.
- With your left hand, palpate the following lymph node groups (See Figure 6, p 35):
  - Apical.
  - Anterior.
  - Posterior.
  - Infraclavicular and supraclavicular.
  - Nodes of the medial aspect of the humerus.
- Now expose the left axilla by lifting and abducting the left arm and supporting at the wrist with your left hand.
- With your right hand, palpate the lymph node groups, as listed above.

! **Assess any nodes for size, shape, consistency, mobility, and tenderness.**

After the examination

Indicate that you could also:

- Palpate the liver edge for an enlarged liver (liver metastases).
- Palpate the spine for tenderness (spinal metastases).
- Auscultate the lung bases (pleural effusions).

Cover up the patient.

Thank the patient.

Ensure that she is comfortable.

Summarise your findings and offer a differential diagnosis.

Offer further investigations if appropriate, e.g. mammogram, USS, or FNAC

Table 59. Most common conditions likely to come up in a breast examination station
Benign breast changes
Fibroadenoma
Fibroadenosis
Fibrocystic disease
Carcinoma

Station 79
Pessaries and suppositories explanation

! Read in conjunction with *Station 106: Explaining skills*.

Like tablets, pessaries and suppositories are medication. Suppositories are for rectal use, common examples being pain-killers and steroids, whereas pessaries are for vaginal use, common examples being antibiotics and progesterone.

! To confuse matters, some preparations can be used via either route.

They are used if oral drugs cannot be given, for example, in the post-operative period or if the patient is vomiting, and if the site of action of the drug is the rectum or vagina, or near enough, for example, the colon or cervix.

In this station you may be asked to explain the use of a pessary and/or a suppository to a patient. Both scenarios have been described here.

Before starting

- Introduce yourself to the patient.
- Confirm her/his reason for attendance.
- Ask her/him if she/he has ever used a pessary or suppository before.

The explanation: items to cover

! Be sensitive to the psychological and sociocultural issues involved in placing a finger into the vagina or rectum, and be sympathetic and understanding.

Pessaries

- Pessaries are bullet-shaped medicines designed for easy insertion into the vagina using your fingers or an applicator. Your body temperature will slowly dissolve the pessary and release the medicine into your vagina.
- Wash and dry your hands.
- Remove the pessary and applicator (if supplied) from its foil or wrapper.
- If an applicator is supplied, push the pessary into the hole at its end.
- Lie down with your knees bent and legs apart.
- Carefully push the pessary high up into your vagina, pointed end first, using either your fingers or the applicator.
- If using an applicator, push the plunger to release the pessary and then remove the applicator.

- Wash your hands afterwards.
- The pessary may leak from your vagina, so it may be best to insert it before bedtime and to use a sanitary towel to avoid staining of the clothes.
- If you miss a dose, insert the pessary as soon as you remember, and then carry on as normal.
- Check the expiry date before using your pessary.
- Store in a cool, dry place and out of children's reach.
- Continue using your pessaries until the course is completed, even if this means inserting them during your monthly period.

Suppositories

- Suppositories are bullet-shaped medicines designed for easy insertion into the lower bowel (rectum) using your fingers. Your body temperature will slowly dissolve the suppository and release the medicine across your rectum and into the bloodstream.
- Empty your bowels if necessary.
- Wash and dry your hands.
- Remove the suppository from its foil or wrapper.
- Lie down on your side with one leg bent and the other straight.
- Carefully push the suppository 2–3 cm up your bottom, pointed end first, using your finger. Some people may prefer to wear a glove, but this is not necessary.
- Close your legs and lie still for a few minutes.
- Wash your hands afterwards.
- If you open your bowels within 2 hours after inserting the suppository, you need to insert another.
- The suppository may leak from your rectum, so it may be best to insert it before bedtime and (if female) to use a sanitary towel to avoid staining of the clothes.
- If you miss a dose, insert the suppository as soon as you remember, and then carry on as normal.
- Check the expiry date before using your suppository.
- Store in a cool, dark place and out of children's reach.
- Continue using your suppositories until the course is completed.

After the explanation

Summarise and check the patient's understanding.

Ask if she/he has any questions or concerns.

Offer her/him a leaflet.

Station 80
Sexual history

This is a history that students often find difficult because of the highly personal nature of the questions involved. The secret is to remain formal and professional throughout, yet to exert tact and, if the patient becomes uncomfortable, a measure of restraint. The OSCE may ask you to focus on either risk assessment or sexual function. If the latter, do not forget that sexual dysfunction often results from medical and psychiatric disorders and/or their treatments, e.g. antihypertensives, antidepressants.

Before starting

Introduce yourself to the patient.

Set the scene: *I'd like to ask you a few questions about your sex life. I don't mean to embarrass you, and it's alright if you prefer not to answer some of my questions. May I begin?*

Reassure the patient about confidentiality.

The history

Would you describe yourself as heterosexual, homosexual, or bisexual?

Who

- Who did you last have sex with, and when was this?
- Who else have you had sex with in the last three months?
- Were they regular or casual partners?
- Were they male or female (or both)?

How

- Did you have vaginal/oral/anal sex?
- If oral or anal sex, did you give it or receive it?
- Did you use protection on each occasion?
- If yes, did you have any problems with it?
- Have you ever been hurt or abused by your partner?

Where

- Have you had sex whilst abroad? Whom with?
- Where are your partners from?
- Is it possible that they have had sex whilst abroad?

Sexually transmitted diseases

Ask about:

- Any sores, discharge, itching, dysuria, and abdominal pain (in females). Explore any positive findings.
- History of sexually transmitted diseases (including HIV) in both the patient and his partner(s).
- In females, date and result of the last cervical smear test.

Sexual function

- *Do you have any problems with, or concerns about, having sex?* You may ask specifically about erectile dysfunction and ejaculatory dysfunction in males, and about hypoactive sexual desire, anorgasmia, vaginismus, and dyspareunia in females.
- Determine the onset, course, and duration of the problem. Is the problem primary or secondary?
- Determine the frequency and timing of the problem. Is the problem partial or situational? In situational erectile dysfunction, the patient is still able to have morning erections.
- Determine the effect that the problem is having on the patient's life.

Past medical history

Drug history

Family history

Social history including smoking, alcohol, and recreational drugs

After taking the history

Ask if there is anything that the patient would like to add which you may have forgotten to ask about.

Thank the patient.

Summarise your findings and offer a further course of action.

Station 81
HIV risk assessment

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to determine his risk of having contracted HIV, and ask him for his consent to do this.

Remember to be especially sensitive, tactful, and empathic.

The risk assessment

- Explore the patient's reason for attendance.

Sexual behaviour

Establish:

- Whether the patient has sex with men, women, or both.
- Whether he has had unprotected anal, vaginal, or oral sex. If so, when, where, how often, and with how many different partners? Receptive anal intercourse is especially high risk.
- Whether he has recently contracted any sexually transmitted diseases.
- The HIV status and sexual practices of the patient's partners.

Recreational drug use

Establish:

- Whether the patient has been injecting himself. If so, has he been sharing needles?
- Whether any of his partners inject themselves.

Blood products and transfusions

Establish:

- Whether the patient is a haemophiliac.
- Whether he has received blood products or transfusions prior to about 1985.

Occupational risk

- Ask about the patient's occupation to determine if he poses an occupational risk.

After the risk assessment

Ask the patient if there is anything that he might add that you have forgotten to ask about.

Give him feedback on his HIV risk and, if appropriate, indicate a further course of action, e.g. an HIV test.
Address his concerns.
Thank him.

Station 82
Condom explanation

Male and female condoms are barrier methods of contraception and prevent sperm from reaching the egg. They are very effective at preventing sexually transmitted infections but less effective than methods such as the pill in preventing pregnancy.

There are many different types of male condoms available on the market. These include plain-end or teat-end, shaped/ribbed or straight-sided, and lubricated or non-lubricated condoms.

Spermicidal condoms are no longer recommended as evidence suggests that nanoxynol-9 may increase the risk of HIV and other sexually transmitted infections such as chlamydia and gonorrhoea.

Before starting

Introduce yourself to the patient.

Establish how much he already knows about using condoms. If correctly used, the male condom is 98% effective, and the female condom is 95% effective. Condoms also protect against STDs.

The equipment

- Two condoms.
- A model of a penis.
- An information booklet on condom use.

Explain the use of a condom

Explain that condom use should be discussed with the partner(s) and that the condom should be put on before any genital contact has taken place.

Demonstrate to:

- Check for the British Kite mark or equivalent symbol, a guarantee of quality.
- Check the expiry date.
- Carefully tear open the pack and remove the condom. Do not use teeth or sharp nails.
- Position the condom on the tip of the erect penis.
- Squeeze out the air from the tip of the condom and gently roll it out to the base of the penis.
- Hold the condom at the base of the penis during penetration.
- After intercourse, remove the condom ensuring that semen is not spilt.
- Dispose of the condom in the bin. Condoms must never be re-used.

Ask the patient to repeat the procedure.

! Explain that condoms can occasionally tear and that, in this event, the patient and his partner should consult a GP or family planning clinic.

Principal side-effects are due to latex allergy and spermicide sensitivity.

Principal contraindications are oil-based lubricants such as Vaseline, hormonal vaginal creams, and antifungal preparations (Canesten is safe to use).

After the explanation

- Ask if the patient has any questions or concerns. (He may ask you about other methods of contraception.)
- Tell him to return should he have any further questions.
- Give him an information booklet on condom use.

Station 83
Combined oral contraceptive pill (COCP) explanation

Before starting

- Introduce yourself to the patient.
- Ask for her name and age.
- Confirm the reason for her attendance.
- Has she considered other methods of contraception?

Explaining the COCP – items to cover

Efficacy

99.9% if used correctly, 97% in practice.

! It is important to emphasise that the pill does not protect against STDs.

Principal benefits

- More regular periods, less blood loss, fewer period pains.
- Decreased risk of ovarian cancer and endometrial cancer.
- Acne often improves.

Principal risks

- Increased risk of deep vein thrombosis and pulmonary embolism.
- Increased risk of myocardial infarction.
- Increased risk of breast cancer and adenoma of the cervix.

Principal adverse effects

- Headache.
- Nausea.
- Dizziness.
- Hypertension.
- Breast tenderness.
- Weight gain.
- Depression.

Principal contraindications

ABSOLUTE

- Thrombophlebitis, thromboembolitic disorder, or history of thromboembolism.
- Stroke.
- Ischaemic heart disease.
- Kidney disease.
- Liver disease.
- History of breast cancer or other oestrogen-dependent cancers of the reproductive organs.
- Pregnancy.

RELATIVE

- Uncontrolled hypertension.
- Migraine.
- Smoking (> 15 cigarettes a day and over the age of 35).
- Abnormal vaginal bleeding.
- Sickle cell disease.
- Breast-feeding.
- Family history of hyperlipidaemia, heart disease, or kidney disease.

! Remember to take a quick drug history, as many common drugs such as ampicillin or carbamazepine can alter the effectiveness of the pill.

How to take the pills

- Start taking the pill on the first Sunday after periods begin.
- Take one pill a day at the same time everyday for either 21 or 28 days, depending on the number of pills in the pack.
- After finishing the 28-day pack, start another one immediately (the last seven pills in the 28-day pack are "dummy pills").
- After finishing the 21-day pack, stop taking the pill for 7 days and then start another pack.
- Use barrier contraception during the first month on the pill.
- If you develop vomiting or diarrhoea, use barrier contraception until your next period.

What if pills are missed

If one pill is missed:

- Take a pill as soon as you can remember to do so.
- Take the next pill at the regular time.
- Use barrier contraception for 7 days.

If two pills are missed:

- Take two pills a day for 2 days.
- Use barrier contraception for 7 days.

If three pills are missed:

- Stop taking the pill and start on another pack in 7 days' time.

Before finishing

Summarise and check understanding.
Hand out a leaflet on the COCP.
Tell the patient to report any severe or unexpected symptoms.



Orthopaedics and rheumatology



Station 84
Rheumatological history

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions to uncover the nature of his complaint, and ask him for his consent to do this.

Ensure that he is comfortable.

The history

Name, age, and occupation, if this information has not already been supplied.

Presenting complaint

Ask the patient about the nature of his complaint.

PAIN

Ask specifically about any pain and determine its site (i.e. which joints are affected), characteristics, and timing. Is there any swelling?

STIFFNESS

Ask specifically about difficulty in starting or carrying out movement.

History of presenting complaint

Ask about:

- The circumstances of disease onset.
- The subsequent course of the disease.
- Any associated features:
  - Local: inflammation, deformity, cracking, clicking, locking, loss of movement.
  - Systemic: skin problems, eye problems, GI disturbances.
  - General: malaise, fever, weight loss.
- Possible trauma or infection.

Social history

- Ask the patient whether he is finding it difficult to complete everyday tasks and, if so, what effect this is having on his life. You might get him to describe a typical day: getting out of bed, toileting, dressing, etc. What things could he do before that he can now no longer do?
- Ask about housing and home-help.
- Ask about mood, and about some of the key features of depression such as low mood, fatiguability and loss of interest.
- Also ask about travel.

Past medical history

- Current, past, and childhood illnesses.
- Surgery.
- Recent visits to the doctor.

Drug history

- Prescribed medication, e.g. NSAIDs, steroids, immunosuppressants.
- Over-the-counter medications.
- Allergies.
- Smoking, alcohol use, and recreational drug use.

Family history

- Parents, siblings, children. Has anyone in the family ever had similar problems?

After taking the history

Ask the patient if there is anything he might add that you have forgotten to ask about.

Thank the patient.

Table 60. Most common conditions likely to come up in a rheumatological history station
Rheumatoid arthritis
Osteoarthritis
Psoriatic arthritis
Gout or pseudo-gout
Ankylosing spondylitis
Septic arthritis
Polymyositis or dermatomyositis
Polymyalgia rheumatica

Station 85
The GALS screening examination

GALS: "Gait, arms, legs, and spine". Remember that GALS is a screening test and that a detailed examination is not required.

Before starting

- Introduce yourself to the patient.
- Explain the examination and ask for his consent to carry it out.
- Ask him to undress to his undergarments.
- Ensure that he is comfortable.

The GALS screening examination

Brief history

- Name, age, and occupation, if this information has not already been supplied.
- *Do you have any pain or stiffness in your muscles, back, or joints?*
- *Do you have any difficulty in climbing stairs?*
- *Do you have any difficulty washing or dressing?*

The examination

General inspection

Inspect the patient standing. Note any obvious scars, swellings, deformities, and/or unusual posturing.

Spine

LOOK

- From the front.
- From behind, looking in particular for lumbar lordosis and scoliosis.
- From the side, looking in particular for kyphosis and fixed flexion deformity.

FEEL

- Press on each vertebral body in turn, trying to elicit tenderness.

MOVE

- Ask the patient to bend forwards and touch his toes. Look for loss of lumbar lordosis, scoliosis (it usually becomes more pronounced), and the normal range of movement.

Ask the patient to sit down on the couch.

- Lateral flexion of the neck. *Put your ear on your shoulder.*
- Flexion and extension of the neck. *Put your chin on your chest.*

- Spinal rotation. *Turn your upper body to either side.*

Demonstrate each of these movements to the patient. In particular, look for restricted range of movement and pain on movement.

Arms

LOOK

- Skin: Rashes, nodules, nail signs.
- Muscles: Wasting, fasciculation.
- Joints: Swelling, asymmetry, deformity.

! Do not forget to inspect both surfaces of the hands.

FEEL

- Skin: Temperature.
- Muscles: General muscle bulk.
- Joints: Tenderness and warmth. Squeeze each hand at the level of the carpal and metacarpal joints, and try to localise any tenderness by squeezing each individual joint in turn.

MOVE

- Hands:
  1. Power grip: test the strength of the grip by asking the patient to squeeze your finger.
  2. Precision pinch grip: test the strength of the grip by trying to "break" the patient's pinch.
- Wrists: Flexion and extension.
- Elbows: Flexion and extension.
- Shoulders: Full external rotation and abduction (hands behind the head).

Demonstrate these movements to the patient. Note if there is a restricted range of movement and/or any pain on movement.

Legs

Now ask the patient to lie on the couch.

LOOK

- Skin: Rashes, nodules, callosities on the soles of the feet.
- Muscles: Wasting, fasciculation.
- Joints: Swelling, asymmetry, deformity.

FEEL

- Skin: Temperature.
- Joints: Tenderness, warmth, and swelling. Palpate each knee along the joint margin. Squeeze each foot, and try to localise any tenderness by squeezing each individual joint in turn.

MOVE

- Bend each knee in turn.
- Hold the knee and hip at 90 degrees of flexion and internally and externally rotate the hip. Keep an eye on the patient's face as you do this and ensure that you do not cause the patient unnecessary pain.
- Next, place one hand on the knee joint and extend it, feeling for any crepitus as you do so.

Gait

Ask the patient to walk, observing:

- General features: rhythm, speed, limp, turning.
- The phases of gait: heel-strike, stance, push-off, and swing.
- Transfer ability: sitting and standing from a chair (note that you should already have had a chance to observe this).

After the examination

Thank the patient.
Offer to help the patient dress.
Ensure that he is comfortable.
Summarise your findings.

Station 86
Hand and wrist examination

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ask him to expose his arms.

Ensure that he is comfortable.

The examination

LOOK

First inspect the dorsum and then the palmar surfaces of the hands.

- Skin: colour, rheumatoid nodules, scars, nail changes.
- Joints: swelling, Heberden's nodes, Bouchard's nodes.
- Shape and position: normal resting position of the hand, ulnar deviation, boutonnière and swan neck deformity of the fingers, mallet finger, finger droop, Z-deformity of the thumb, muscle wasting, Dupuytren's contracture.

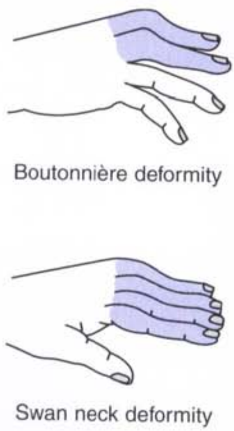


Figure 40. The arthritic hand. Boutonnière and swan neck deformity of the fingers

FEEL

Ask if the hands are painful.

- Skin: temperature.
- Finger and wrist joints: swelling, synovial thickening, tenderness.
- Anatomical snuff box (fractured scaphoid).
- Tip of the radial styloid and head of the ulna.

MOVE

Test active and passive movements, looking for limitation in the normal range of movement. Ask the patient to report only pain.

Wrist

- Flexion and extension.
- Ulnar and radial deviation.
- Pronation and supination.

Thumb

- Extension. *Stick your thumb out to the side.*
- Abduction. *Point your thumb up to the ceiling.*
- Adduction. *Collect your thumb in your palm.*
- Opposition. *Appose the tip of your thumb to the tip of your little finger.*

Fingers

Each finger should be fully extended and flexed. Look at the movements of the metacarpophalangeal and interphalangeal joints. Test the grip strength by asking the patient to make a fist and try to squeeze your fingers. Try to open the fist. Test the pincer strength by trying to break the pinch between his thumb and first finger.

Special tests

- Carpal tunnel tests:
  - Try to elicit Tinnel's sign by extending the hand and tapping on the median nerve in the carpal tunnel.
  - Try to elicit Phalen's sign by holding the hand in forced flexion for 30–60 seconds.
- *Flexor profundus*: hold a finger extended at the proximal interphalangeal joint and ask the patient to flex the distal interphalangeal joint of that same finger.
- *Flexor superficialis*: ask the patient to flex a finger whilst holding all the other fingers on the same hand extended.
- Assess function by asking the patient to make use of an everyday object such as a pen or cup.

After the examination

State that you would also like to examine the vascular and neurological systems of the upper limb.

If appropriate, indicate that you would order some tests, e.g. X-ray, FBC, ESR, rheumatoid factor, etc.

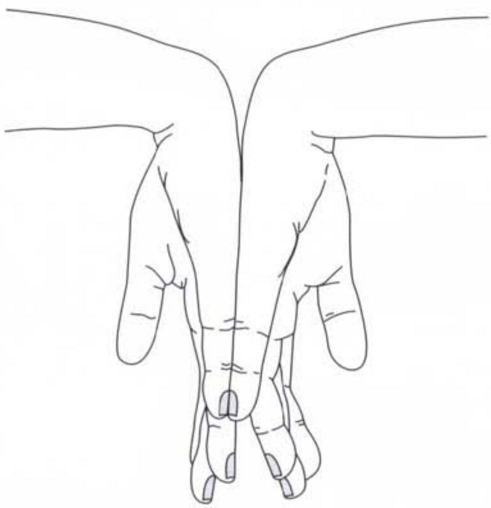


Figure 41. An alternative and quicker method for eliciting Phalen's sign

Thank the patient.
Ensure that he is comfortable.
Offer to help the patient put his clothes back on.
Offer a differential diagnosis.

Table 61. Most common conditions likely to come up in a hand and wrist examination station
Osteoarthritis
Rheumatoid arthritis
Psoriatic arthritis – look at the nails!
Lesions of the median, radial, or ulnar nerves
Gout
Dupuytren's disease
De Quervain's tenosynovitis
Trigger finger

Station 87
Elbow examination

This station is unlikely to come up on its own but may be asked as part of a hand and wrist examination, and is included here for completeness.

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ask him to expose his arms.

Ensure that he is comfortable.

The examination

LOOK

Ask the patient to hold his arms by his side.

- Overall impression: Varus or valgus deformities (look from behind), effusions, inflammation of the olecranon bursa.
- Skin: Rheumatoid nodules, gouty tophi, scars.
- Muscle wasting: Biceps, triceps, forearm.

FEEL

Ask if the arms are painful.

- Skin: Temperature, rheumatoid nodules, gouty tophi.
- Joints: Tenderness, effusions, synovial thickening.
- Bones: Tenderness of the lateral and medial epicondyles.

MOVE

- Flexion and extension.
  - Tennis elbow: ask about pain at the *lateral* epicondyle on elbow *extension* and forced wrist *extension*.
  - Golfer's elbow: ask about pain at the *medial* epicondyle on elbow *flexion* and forced wrist *flexion*.
- Pronation and supination. Show the patient how to tuck his elbows into his sides and to turn his arms so that the palm of his hands face up and down (a bit like the gesture for "I don't know").

After the examination

State that you would also like to examine the wrist and hand.

State that you would also like to examine the vascular and neurological systems of the upper limb.

If appropriate, indicate that you would order some tests, e.g. X-ray, FBC, ESR, rheumatoid factor, etc.

Thank the patient.

Offer to help the patient put his clothes back on.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 62. Most common conditions likely to come up in an elbow examination station
Osteoarthritis
Rheumatoid arthritis
Olecranon bursitis
Tennis elbow
Golfer's elbow

Station 88
Shoulder examination

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ask him to undress from the waist upward.

Ensure that he is comfortable.

The examination

LOOK

Inspect from front and back.

- Overall impression: Alignment, position of the arms, axillae, prominence of the acromioclavicular and sternoclavicular joints.
- Skin: Colour, sinuses, scars.
- Muscle wasting: Deltoid, periscapular muscles (supraspinatus and infraspinatus).

FEEL

Ask if the shoulders are painful.

- Skin: Temperature.
- Bones and joints: Palpate the bony landmarks of the shoulder, starting at the sternoclavicular joint and moving laterally along the clavicle. Try to localise any tenderness. Can you feel any effusions?
- Biceps tendon.

MOVE

Demonstrate these movements to the patient. Note if there is a restricted range of movement and/or any pain on movement.

- Abduction: *Raise your arms above your head, making the palms of your hands touch.*
- Adduction: *Cross your arms across the front of your body.*
- Flexion: *Raise your arms forwards.*
- Extension: *Pull your arms backwards.*
- External rotation: *With your arms bent and your elbows tucked into your sides separate your hands.*
- Internal rotation: *With your arms bent and your elbows tucked into your sides bring your hands together.*
- Internal rotation in adduction: *Reach up your back and touch your scapulae.*

- External rotation in abduction: *Hold your hands behind your neck, like you do at the end of the day.*

! If any one movement is limited, also test the passive range of movement.

Serratus anterior function

Ask the patient to put his hands against a wall and to push against it. Observe the scapulae from behind, looking for asymmetry or winging.

After the examination

State that you would also like to examine the vascular and neurological systems of the upper limb.

If appropriate, indicate that you would order some tests, e.g. X-ray, FBC, ESR, rheumatoid factor, etc.

Thank the patient.

Offer to help the patient put his clothes back on.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 63. Most common conditions likely to come up in a shoulder examination OSCE
Frozen shoulder
Acute calcific tendonitis
Rotator cuff tear
Winging of the scapula
Bicipital tendonitis
Osteoarthritis
Referred pain from the cervical spine or the heart
Rupture of the long head of biceps (look out for Popeye's sign!)

Station 89
Spinal examination

Before starting

- Introduce yourself to the patient.
- Explain the examination and ask for his consent to carry it out.
- Ask him to undress to his undergarments.
- Ensure that he is comfortable.

The examination

LOOK

Inspect from front and back.

- General inspection: ask the patient to stand and assess posture. Are there any obvious malformations?
- Skin: scars, pigmentation, abnormal hair, unusual skin creases.
- Shape and posture.
- Spine:
  - Lateral curvature of the spine – *scoliosis* (observe from the back).
  - Abnormal increase in the kyphotic curvature of the thoracic spine – *kyphosis* (observe from the side).
  - Sharp, angular bend in the spine – a *kyphos* (observe from the side).
  - Loss or exaggeration of lumbar lordosis.
- Asymmetry or malformation of the chest.
- Asymmetry of the pelvis.

FEEL

Ask if there is any pain.

- Palpate and percuss the spinous processes, interspinous ligaments, and paravertebral muscles.

MOVE

Ask the patient to copy your movements, looking for any limitation of range of movement. Ask the patient to indicate if any of the movements are painful.

Gait

Cervical spine

- Flexion
- Extension
- Lateral flexion
- Rotation (look back over each shoulder)

Thoracic spine

- Rotation (twist from side to side – ask the patient to sit or stabilise his pelvis)

Measure chest expansion. It should be at least 5 cm.

Lumbar spine

- Flexion. *Touch your toes, keep your knees straight.*
- Extension. *Lean back, keep your knees straight.*
- Lateral flexion. *Slide your hand alongside the outside of your leg.*

Measure lumbar excursion by drawing a line from 10 cm above L5 to 5cm below it and asking the patient to bend fully forwards. Extension of the line by <5 cm indicates movement restriction.

Special tests

Ask the patient to lie prone.

- Palpate the sacroiliac joints for tenderness.
- Press on the mid-line of the sacrum to test if movement of the sacroiliac joints is painful.
- Femoral stretch test (L2–L4):
  - Flex the knee.
  - If this does not trigger any pain, extend the leg at the hip – pain suggests irritation of the second, third, or fourth lumbar root of that side.

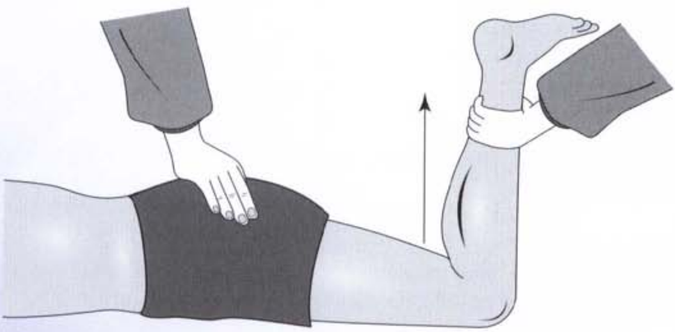


Figure 42. The femoral stretch test

Ask the patient to lie supine.

- Straight leg raise (sciatica, L5–S2):
  - Flex the hip while maintaining the knee in extension.
  - Pain in the thigh, buttock, and back suggests sciatica.

- The response can be amplified by concomitant dorsiflexion of the foot (Bragard's test).
- Perform Lasegue's test if you're after a gold medal! With the hip and knee flexed to 90 degrees, and your left hand on the knee, extend the knee with your right hand.

After the examination

State that you would also like to carry out neurological and vascular examinations.

If appropriate, indicate that you would order some tests, e.g. X-ray, MRI, DEXA, FBC, ESR, bone profile, etc.

Thank the patient.

Offer to help the patient put his clothes back on.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 64. Most common conditions likely to come up in a spinal examination station
Ankylosing spondylitis
Osteoarthritis
Scoliosis
Kyphosis
Muscular back pain
Prolapsed disc

Station 90
Hip examination

Before starting

- Introduce yourself to the patient.
- Explain the examination and ask for his consent to carry it out.
- Ask him to undress to his undergarments.
- Ensure that he is comfortable.

The examination

LOOK

Inspect from front and back.

- General inspection: posture, symmetry of legs and pelvis, deformity, muscle wasting, scars.
- Gait (observe from the front and back). Note any limp – antalgic, short leg, or Trendelenberg.
- Trendelenberg's test: ask the patient to stand on each leg in turn, lifting the other one off the ground by bending it at the knee. Face the patient and support him by the index fingers of his outstretched hands. The sign is positive if the pelvis drops on the unsupported side (See Figure 43, p 263).

Ask the patient to lie supine.

- Skin: colour, sinuses, scars.
- Position: limb shortening, limb rotation, abduction or adduction deformity, flexion deformity.
- Limb length:
  - To measure *true* leg length, position the pelvis so that the iliac crests lie in the same horizontal plane, at right angles to the trunk (this is not possible if there is a fixed abduction or adduction deformity) and then measure the distance from the anterior superior iliac spine (ASIS) to the medial malleolus. True leg shortening suggests pathology of the hip joint.
  - To measure *apparent* leg length, measure the distance from the xiphisternum to the medial malleolus. Apparent leg shortening suggests pelvic tilt, most often due to an adduction deformity of the hip.
- Circumference of the quadriceps muscles at a fixed point.

FEEL

Ask if there is any pain.

- Skin: temperature, effusions (difficult to feel).
- Bones and joints: bony landmarks of the hip joint, inguinal ligament.

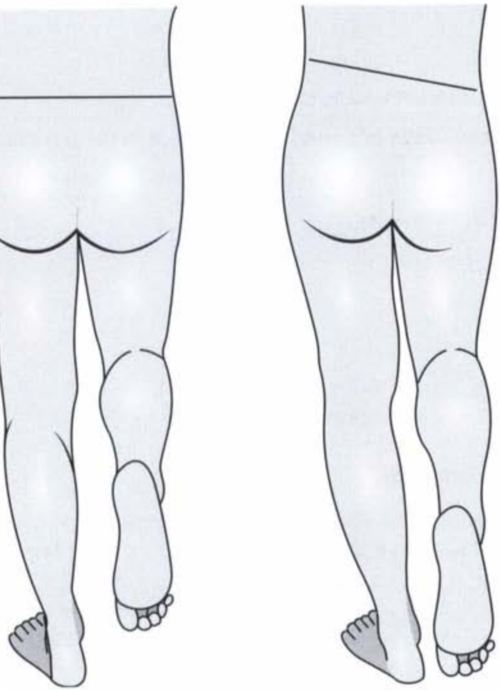


Figure 43. Negative and positive Trendelenberg's test. A positive Trendelenberg's test suggests that the weight-bearing hip is either painful or has a weak gluteus medius

MOVE

Look for limitation of the normal range of movement, and ask the patient to report any pain.

- Flexion and Thomas' test:
  - Flex both hips and place your hand in the small of the back to ensure that the lumbar lordosis has been eliminated.
  - Hold one hip flexed and straighten the other leg, maintaining your hand in the small of the back. If the leg cannot be straightened and the knee is unable to rest on the couch, a fixed flexion deformity is present.
  - Repeat for the other leg.
- Abduction and adduction:
  - Drop one leg over the edge of the couch to fix the pelvis.
  - Place one hand on the anterior superior iliac spine of the other leg and carry it through abduction and adduction.

    - Repeat for the other leg.
- Rotation:
    - Flex the hip and knee to 90 degrees.
    - Hold the knee in the left hand and the ankle in the right hand.
    - Using your right hand, rotate the hip internally and externally.
    - Repeat for the other leg.

Ask the patient to lie prone.

- Look for scars, etc.
- Feel for tenderness.
- Extend each hip in turn. Keep a hand under a bent knee and extend the hip by pulling the leg up at the ankle.

After the examination

State that you would also like to examine the vascular and neurological systems of the lower limbs.

If appropriate, indicate that you would order some tests, e.g. hip and knee X-ray, DEXA, FBC, ESR, bone profile, etc.

Thank the patient.

Offer to help the patient put his clothes back on.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 65. Most common conditions likely to come up in a hip examination station
Osteoarthritis: hip in flexion, external rotation, and adduction, apparent limb shortening, pain, limp, limited range of movement, Heberden's nodes on distal interphalangeal joints
Hip replacement
Hip arthrodesis
Slipped upper femoral epiphysis
Trendelenburg gait
Antalgic gait

Station 91
Knee examination

Before starting

- Introduce yourself to the patient.
- Explain the examination and ask for his consent to carry it out.
- Ask him to undress from the waist downwards.
- Ensure that he is comfortable.

The examination

Ask the patient to stand.

LOOK

- Gait: observe from in front and behind, looking for instability, limp, and limited range of movement.
- Position: neutral, varus, valgus, fixed flexion, hyperextension (recurvatum).
- Squat test (avoid in elderly patients).

Ask the patient to lie supine.

- Skin: colour, sinuses, scars (including arthroscopic scars).
- Shape: alignment, effusion, patellar alignment.
- Position: hyperextension, varus, valgus.

Measure quadriceps circumference a hand breadth above the patella.

FEEL

Ask if there is any pain.

- Skin: temperature (compare both sides).
- Effusions: patellar tap test, cross fluctuation, and bulge test.
- Joint line at 90 degrees of flexion.
- Synovial thickening.
- Surrounding structures: ligaments, tibial tuberosity, femoral condyles.
- Patella: note size and height and carry out patellar friction and patellar apprehension tests (displace the patella laterally as you flex the knee).

MOVE

- Active:
    - Flexion.
    - Extension.
- Passive:
    - Flexion (to 140 degrees), feeling for crepitus and clicks.

  - Extension (to 0 to –10 degrees).
- Straight leg raise.

Special tests

- Collateral ligament tears:
  - Apply varus and valgus stresses at 0 degrees and 20 degrees of flexion. Hold the leg under one arm and apply pressure on the medial/lateral side of the knee joint.
- Cruciate ligament tears:
  - Posterior sag test: flex the knee to 90 degrees and look for a sag across the knee. The presence of a sag indicates a posterior cruciate ligament tear.
  - Anterior and posterior drawer tests: flex the knee to 90 degrees, sit on the foot (ask the patient first!), and pull the tibia back and forth.
  - Lachman's test: flex the knee to 30 degrees and, holding the thigh in one hand and the proximal tibia in the other, attempt to make the joint surfaces slide on one another.

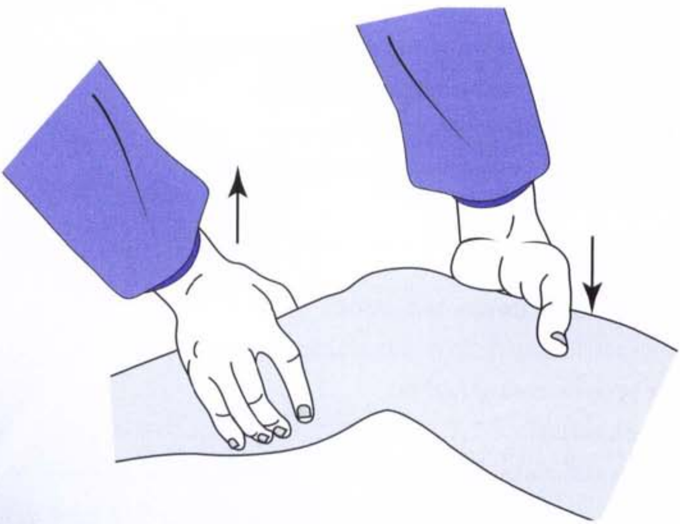


Figure 44. Lachman's test

- Meniscal tears
  - McMurray's test: place one hand on the knee and the other on the ankle. Flex the hip and knee. To test the medial meniscus, palpate the posteromedial margin of the joint. Then hold the leg in external rotation and extend the knee. To test the lateral meniscus, palpate the posterolateral margin of the joint. Then hold the leg in internal rotation and extend the knee. A positive test is one that elicits pain, resistance, or a reproducible click.
  - Apley's grinding test (not usually performed).

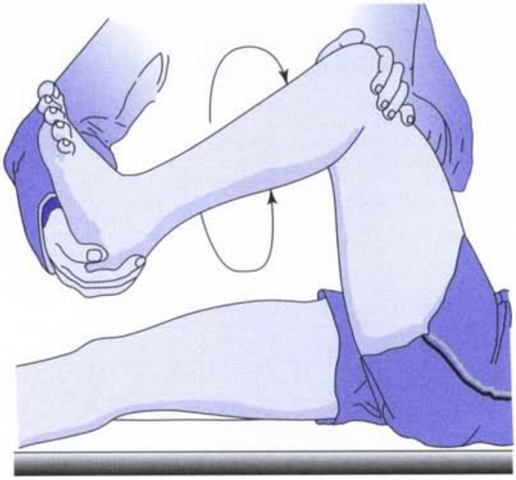


Figure 45. McMurray's test

Lie the patient prone.

- Popliteal fossa
  - Inspect the popliteal fossa.
  - Palpate the popliteal fossa for a Baker's (popliteal) cyst.

After the examination

State that you would also like to examine the vascular and neurological systems of the lower limbs.

If appropriate, indicate that you would order some tests, e.g. knee X-ray, FBC, ESR, bone profile, rheumatoid factor, etc.

Thank the patient.

Offer to help the patient put his clothes back on.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

! **The age and sex of the patient have a strong bearing on the differential diagnosis.**

Table 66. Most common conditions likely to come up in a knee examination station
Osteoarthritis
Rheumatoid arthritis
Baker's (popliteal) cyst
Prepatellar and infrapatellar bursitis
Chrondromalacia patellae
Recurrent subluxation of the patella
Tibial apophysitis (Osgood–Schlätter's disease)
Collateral ligament tears
Cruciate ligament tears
Meniscal tears

Station 92
Ankle and foot examination

Before starting

Introduce yourself to the patient.

Explain the examination and ask for his consent to carry it out.

Ask him to undress from the waist downwards.

Ensure that he is comfortable.

The examination

The patient is standing.

LOOK

- General inspection: posture, symmetry, and any obvious deformities. Ask the patient to turn around.
- Gait: observe from front and back. Ask the patient to stand on his tiptoes and then on his heels.

Ask the patient to lie on the couch.

- Skin: colour, sinuses, scars, corns, calluses, ulcers.
- Shape: alignment, *pes planus, pes cavus,* deformities of the toes (*hallux valgus*, claw, hammer, and mallet toes).
- Position: varus or valgus hindfoot deformity.

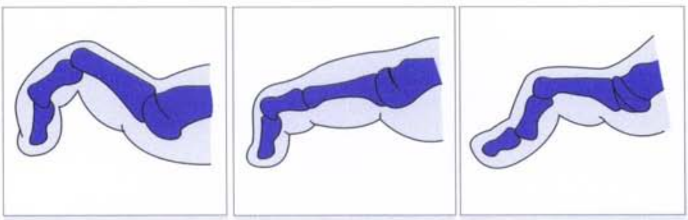


Figure 46. Claw, mallet, and hammer toes

FEEL

Ask about any pain.

- Skin: temperature (compare both sides), abnormal thickening on the soles of the feet.
- Pulses: dorsalis pedis, posterior tibial.
- Bone and joints: palpate the joint margin, forefoot (metatarsals and metatarsophalangeal joints) and hindfoot and, localise any tenderness. Remember to keep looking at the patient's face.

MOVE

Look for restriction of the normal range of movement. Ask the patient to report any pain.

Ankle joint

- Hold the heel in the left hand and the forefoot in the right hand.
- Plantarflex the foot (normal range 40 degrees).
- Dorsiflex the foot (normal range 25 degrees).
- Compare range of movement to that in the other foot.

Subtalar joint

- Hold the heel in the left hand and the forefoot in the right hand, as above, with the ankle fixed at 90 degrees.
- Invert the foot (normal range 30 degrees).
- Evert the foot (normal range 30 degrees).
- Compare the range of movement to that in the other foot.

Midtarsal joint

- Hold the heel in the left hand and the forefoot in the right hand.
- Flex, extend, invert, and evert the forefoot.

Toes

- Flex and extend each toe in turn. If there is any tenderness, try to localise it to a particular joint.

Ask the patient to lie prone.

- Look for any scars and for wasting of the calves.
- Palpate the calf muscle and the Achilles' tendon (*tendo calcaneus*).
- Simmond's test: squeeze the calf – if the foot plantarflexes, the Achilles' tendon is intact.

After the examination

State that you would also like to examine the vascular and neurological systems of the lower limbs.

If appropriate, indicate that you would order some tests, e.g. foot and ankle X-ray, FBC, ESR, bone profile, rheumatoid factor, etc.

Thank the patient.

Offer to help the patient put his socks and shoes back on.

Ensure that he is comfortable.

Summarise your findings and offer a differential diagnosis.

Table 68. Most common conditions likely to come up in an ankle and foot examination station
Osteoarthritis
Rheumatoid arthritis
Ankle injuries
Deformities of the foot
Plantar fasciitis



Emergency medicine and anaesthesiology

Station 93
Adult Basic Life Support

- Make sure the victim, and bystanders, and you are safe.
- Check the victim for a response. Gently shake his shoulders and ask loudly, *Are you all right?*

If he responds:

- Leave him in the position in which you find him provided there is no further danger.
- Try to find out what is wrong with him and get help if needed.
- Reassess him regularly.

If he does not respond:

- Shout for help.
- Turn him onto his back and open the airway using the head-tilt, chin-lift technique.
    - Place your hand on his forehead and gently tilt his head back.
    - With your fingertips under the point of his chin, lift the chin to open the airway.
    - Holding his airway open, put your ear to his mouth. *Listen, feel*, and *look* for breathing for no more than 10 seconds. If you have any doubt about whether breathing is normal, assume that it is not.

! Agonal breathing (occasional gasps, slow, laboured, or noisy breathing) is common in the early stages of cardiac arrest and should not be mistaken for a sign of life.

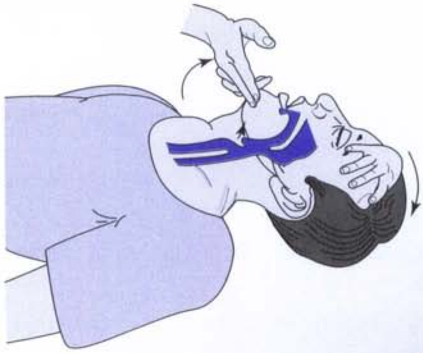


Figure 47. The head-tilt, chin-lift technique

If he is breathing normally:

- Turn him into the recovery position.

- Send or go for help, or call for an ambulance.
- Check for continued breathing.

If he is not breathing normally:

- Ask someone to call for an ambulance or, if you are on your own, do this yourself: you may need to leave the victim.
  - Deliver 30 chest compressions followed by 2 rescue breaths.

    To deliver chest compressions:

    - Kneel by the side of the victim.
    - Place the heel of one hand in the centre of the victim's chest.
    - Place the heel of the other hand on top of the first hand.
    - Interlock the fingers of your hands and ensure that pressure is not applied on the victim's ribs, bottom end of his chest bone, or upper abdomen.
    - Position yourself vertically above the victim's chest and, with your arms straight, press down on the sternum 4–5 cm.
    - After each compression, release all the pressure on the chest without losing contact between your hands and the sternum. Repeat at a rate of about 100 per minute.
    - Compression and release should take an equal amount of time.

    To deliver rescue breaths:

    - After 30 compressions, again open the airway using head tilt and chin lift.
    - Pinch the soft part of the victim's nose closed using the index finger and thumb of the hand on his forehead.
    - Allow his mouth to open, but maintain chin lift.
    - Take a normal breath and place your lips around his mouth, making sure that you have a good seal.
    - Blow steadily into his mouth whilst watching for his chest to rise. Take about 1 second to make his chest rise.
    - Maintaining head tilt and chin lift, take your mouth away from him and watch for his chest to fall.
    - Deliver a second rescue breath and return to chest compressions without delay.
- Continue with chest compressions and rescue breaths at a ratio of 30:2.
- Stop to re-check the victim only if he starts breathing normally.
- If your rescue breaths do not make the chest rise as in normal breathing, check the victim's mouth and remove any obstruction and re-check that there is

adequate head tilt and chin lift. Do not attempt more than 2 rescue breaths each time before returning to chest compressions.

- If there is more than one rescuer present, another should take over CPR every 2 minutes to prevent fatigue.

If the rescuer is unable or unwilling to give rescue breaths, he can give chest compressions at a rate of 100 compressions per minute, stopping only to recheck the victim if he starts breathing normally.

Continue resuscitation until qualified help arrives or until the victim starts breathing normally or until exhaustion.

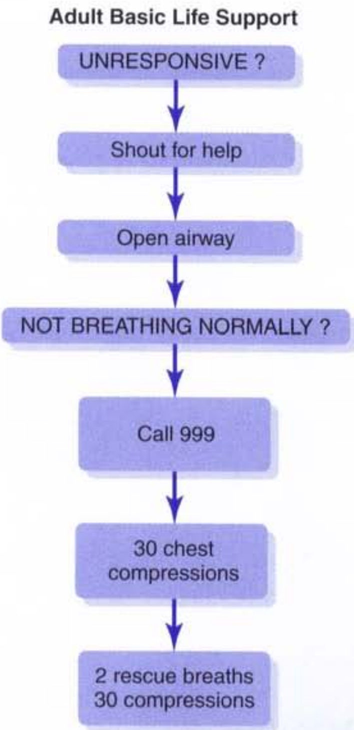


Figure 48. Basic Life Support algorithm

The recovery position

- Remove the victim's spectacles.
- Kneel beside the victim and make sure that both his legs are straight.
- Place the arm nearest to you out at right angles to his body, elbow bent, with the hand palm uppermost.
- Bring the far arm across the chest, and hold the back of the hand against the victim's cheek nearest to you.
- With your other hand, grasp the far leg just above the knee and pull it up, keeping the foot on the ground.
- Keeping his hand pressed against his cheek, pull on the far leg to roll the victim towards you and onto his side.
- Adjust the upper leg so that both the hip and knee are bent at right angles.
- Tilt the head back to ensure that the airway remains open.
- Adjust the hand under the cheek, if necessary, to keep the head tilted.

Adapted from Resuscitation Council (UK) 2005 Guidelines.



Figure 49. The recovery position

Adult choking algorithm

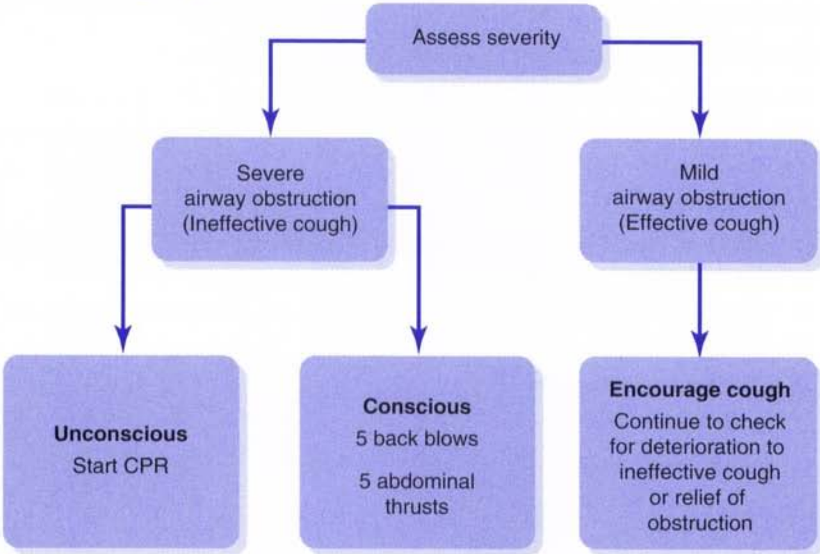


Figure 50. Adult choking algorithm

Station 94
In-hospital resuscitation

This sequence should be followed for a collapsed patient in hospital.

- Ensure personal safety.
- Shout for help.
- Check the patient for a response – gently shake his shoulders and loudly ask *Are you all right?*
- If the patient responds:
    - Urgent medical assessment is required. Depending on local protocols, this may be by the resuscitation team.
    - While awaiting the arrival of this team, assess the patient using the ABCDE approach.
    - Give the patient oxygen.
    - Attach monitoring leads.
    - Obtain venous access.
- If the patient does not respond:
    - Turn the patient onto his back.
    - Open the airway using the head-tilt, chin-lift technique.
    - Look into the mouth. If a foreign body or debris is visible, attempt to remove it using suction or forceps as appropriate.
    - If there is a risk of C-spine injury, use the jaw-thrust or chin-lift technique with manual in-line stabilisation (MILS) of the head and neck by an assistant (if sufficient staff are available). If airway obstruction persists despite jaw thrust or chin lift, add head tilt a small amount at a time. Establishing an airway should take priority over concerns about a potential C-spine injury.
- Holding the patient's airway open, put your ear to his mouth. *Listen, feel*, and *look* for breathing for no more than 10 seconds.
- Assess the carotid pulse at the same time or after the breathing check.



Figure 51. The jaw-thrust technique

! Agonal breathing (occasional gasps, slow, laboured, or noisy breathing) is common in the early stages of cardiac arrest and should not be mistaken for a sign of life.

- If the patient has a pulse or other signs of life:
  - Urgent medical assessment is required. Depending on local protocols, this may be by the resuscitation team.
  - While awaiting the arrival of this team, assess the patient using the ABCDE approach.
  - Give the patient oxygen.
  - Attach monitoring leads.
  - Obtain venous access.
- If there is no pulse or other signs of life:
  - One person should start CPR as others call the resuscitation team or collect the resuscitation equipment. If only one member of staff is present, this will mean leaving the patient.
  - Give 30 chest compressions followed by 2 ventilations. Place your interlocked hands in the middle of the lower half of the sternum and depress the chest by 4–5 cm, aiming for a rate of 100 compressions per minute.
  - Maintain the airway and ventilate the lungs with the most appropriate equipment immediately at hand. A pocket mask, which may be supplemented by an oral airway, is usually readily available. If no equipment is immediately at hand, give mouth-to-mouth ventilation unless there are clinical reasons to avoid mouth-to-mouth contact.
  - Use an inspiratory time of 1 second and give enough volume to produce a chest rise as in normal breathing. Add supplemental oxygen as soon as possible.
  - Once the airway has been secured, continue chest compressions uninterrupted at a rate of 100 compressions per minute and ventilate the lungs at approximately 10 breaths per minute. Only stop compressions for defibrillation or pulse checks.
  - Upon arrival of the defibrillator, apply the paddles to the patient and analyse the rhythm. The use of adhesive electrode pads or the "quick look" paddles technique enables rapid assessment of the heart rhythm compared to attaching ECG electrodes.
  - If self-adhesive defibrillation pads are available and there is more than one rescuer, apply the pads without interrupting chest compression. Pause briefly to assess rhythm and, if indicated, proceed to either manual or automated defibrillation.
  - Recommence chest compressions immediately after the first attempt at defibrillation. Do not pause to assess the pulse or heart rhythm.

  - Continue resuscitation until the resuscitation team arrives or until the patient shows signs of life. If using an automated external defibrillator (AED), follow the voice prompts. If using a manual defibrillator, follow the algorithm for ALS (see next station).
  - Once resuscitation is underway, and if there are sufficient people available, prepare intravenous cannulae and drugs that are likely to be needed by the resuscitation team.
  - Identify one person to be responsible for handover to the resuscitation team leader. Locate the patient's notes.
  - Change the person providing chest compressions every 2 minutes to prevent fatigue.
- If the patient is not breathing but has a pulse (respiratory arrest):
  - Ventilate the patient's lungs as described above, checking for a pulse after every 10 breaths (about every minute).
  - If there are any doubts about the presence of a pulse, start chest compressions until more experienced help arrives.
- If a patient has a monitored and witnessed cardiac arrest:
  - Confirm cardiac arrest and shout for help.
  - After confirmation of VF/VT cardiac arrest, deliver a first shock.
  - If a defibrillator is not immediately to hand, consider giving a single precordial thump immediately after confirmation of VF/VT cardiac arrest.
  - Start CPR (as described above) immediately after the first shock is delivered.
  - Continue resuscitation in accordance with the algorithm for ALS.

Adapted from Resuscitation Council (UK) 2005 Guidelines.

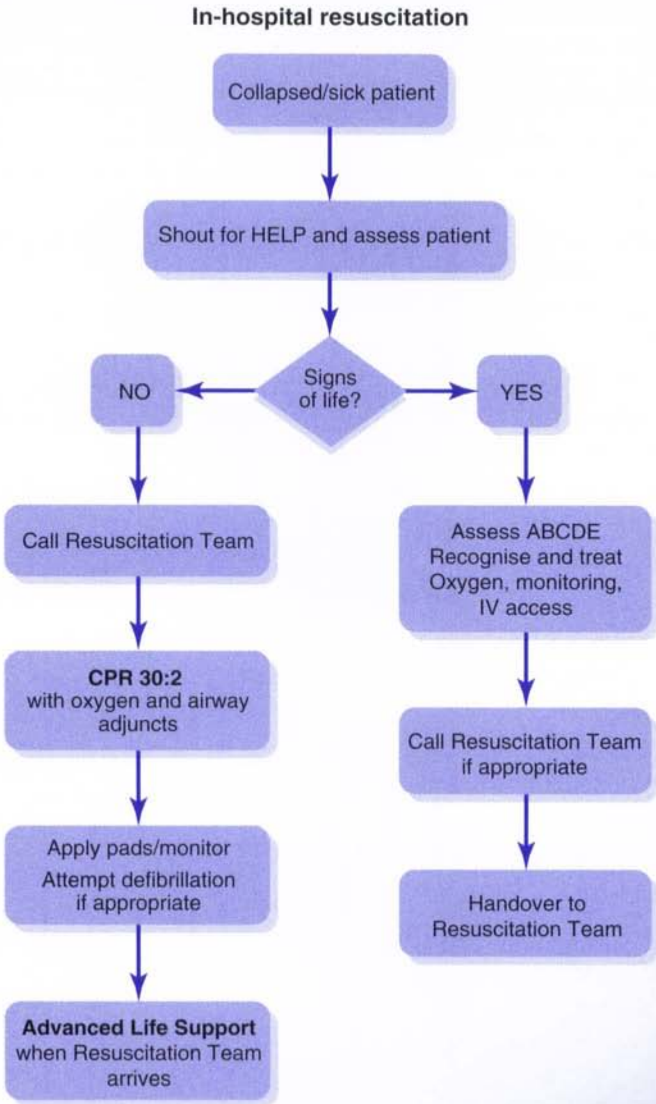


Figure 52. In-hospital resuscitation algorithm

Station 95
Advanced Life Support

Specifications: A mannequin in lieu of a patient.

The patient has arrested and CPR is under way. The defibrillator/monitor has just been attached.

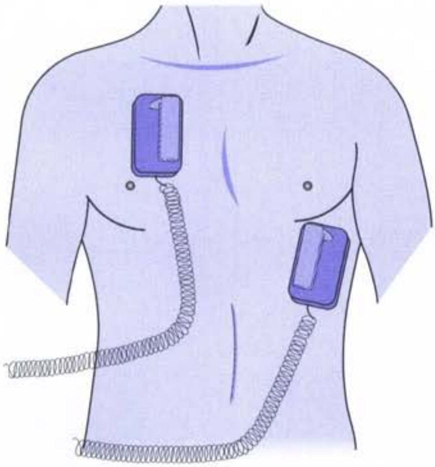


Figure 53. Positioning of the defibrillator paddles

- Assess the rhythm.

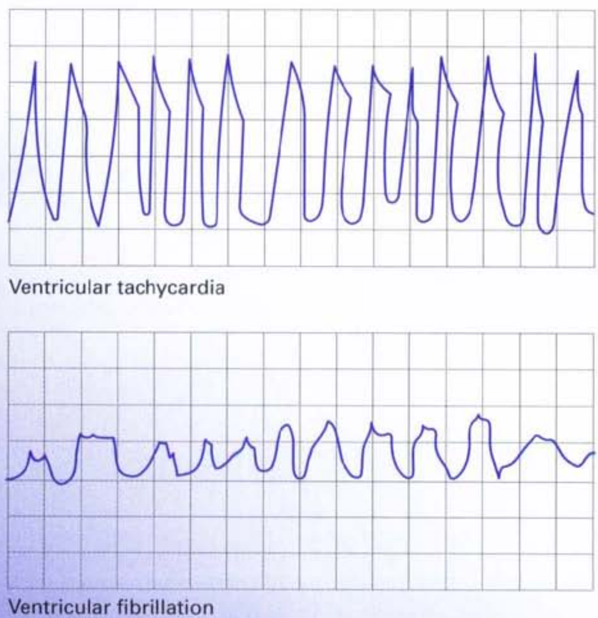


Figure 54. ECG traces of ventricular fibrillation and ventricular tachycardia

- If the rhythm is shockable, i.e. ventricular fibrillation or pulseless ventricular tachycardia, attempt defibrillation (one shock – 150–200 J biphasic or 360 J monophasic).

! Remember to shout *All clear and Oxygen away*, and to perform a visual check of the area each time you attempt defibrillation.

- Immediately resume CPR with chest compressions (30:2) without reassessing the rhythm or feeling for a pulse.
- Continue CPR for 2 minutes then pause briefly to check the monitor.
- If VF/VT persists:
  - Immediately deliver a second shock (150–360 J biphasic or 360 J monophasic).
  - Resume CPR immediately and continue for 2 minutes.
  - Pause briefly to check the monitor.
- If VF/VT still persists:
  - Give adrenaline 1 mg IV.
  - Immediately deliver a third shock (150–360 J biphasic or 360 J monophasic).
  - Resume CPR immediately and continue for 2 minutes.
  - Pause briefly to check the monitor.
- If VF/VT still persists:
  - Give amiodarone 300 mg IV.
  - Immediately deliver a fourth shock (150–360 J biphasic or 360 J monophasic).
  - Resume CPR immediately and continue for 2 minutes.
  - Give adrenaline 1 mg IV immediately before alternate shocks (i.e. approximately every 3–5 minutes).
  - Deliver a further shock after each 2 minute period of CPR and after confirming that VF/VT persists.
  - If organised electrical activity is seen during this brief pause in compressions, check for a pulse.
  - If a pulse is present, start post-resuscitation care.
  - If a pulse is absent, continue CPR and switch to the non-shockable algorithm.

During CPR, seek to

- Correct reversible causes*.
- Check electrode position and contact.
- Attempt/verify: IV access, airway, and oxygen.
- Give uninterrupted compressions when the airway is secure.
- Give adrenaline every 3–5 minutes.
- Consider: amiodarone, atropine, magnesium.

*Reversible causes:

Hypoxia	**T**ension pneumothorax
Hypovolaemia	**T**amponade
Hypo/hyperkalaemia, metabolic	**T**oxins
Hypothermia	**T**hrombosis (coronary or pulmonary)

Precordial thump

If a patient has a monitored and witnessed cardiac arrest and a defibrillator is not immediately to hand, consider giving a single precordial thump immediately after confirmation of VF/VT cardiac arrest. Using the ulnar edge of a tightly clenched fist, deliver a sharp impact to the lower half of the sternum from a height of about 20 cm, then retract the fist immediately to create an impulse-like stimulus. A precordial thump is most likely to be successful in converting VT to sinus rhythm.

Non-shockable rhythms (PEA and asystole)

Survival after cardiac arrest with PEA or asystole is unlikely unless a reversible cause can be found and treated successfully.

Sequence of actions for PEA (cardiac electrical activity in the absence of any palpable pulse):

- Start CPR 30:2.
- Give adrenaline 1 mg IV as soon as IV access is achieved.
- Continue CPR 30:2 until the airway is secured, then continue chest compressions without pausing during ventilation.
- Recheck the rhythm after 2 minutes.
- If there is no change in the ECG appearance:
  - Continue CPR.
  - Recheck the rhythm after 2 minutes and proceed accordingly.

  - Give further adrenaline 1 mg IV after every 3–5 minutes (alternate loops).
- If the ECG changes and organized electrical activity is seen, check for a pulse.
- If a pulse is present, start post-resuscitation care.
- If no pulse is present:
  - Continue CPR.
  - Recheck the rhythm after 2 minutes and proceed accordingly.
  - Give further adrenaline 1 mg IV after every 3–5 minutes (alternate loops).

Sequence of actions for asystole and slow PEA (rate < 60 per minute):

- Start CPR 30:2.
- Without stopping CPR, check that the leads are attached correctly.
- Give adrenaline 1 mg IV as soon as IV access is achieved.
- Give atropine 3 mg IV (once only).
- Continue CPR 30:2 until the airway is secured, then continue chest compressions without pausing during ventilation.
- Recheck the rhythm after 2 minutes and proceed accordingly.
- If VF/VT recurs, change to the shockable rhythm algorithm.
- If there is doubt as to whether the rhythm is asystole or fine VF, do *not* attempt defibrillation but continue CPR.
- Give further adrenaline 1 mg IV after every 3–5 minutes (alternate loops).

CPR before defibrillation

- In the case of out-of-hospital cardiac arrest attended – but not witnessed – by health-care professionals equipped with manual defibrillators, give CPR for 2 minutes before defibrillating.
- Do not delay defibrillation if an out-of-hospital arrest has been witnessed by a health-care professional.
- Do not delay defibrillation for an in-hospital cardiac arrest.

Adapted from Resuscitation Council (UK) 2005 Guidelines, which can be found at http://www.resus.org.uk/pages/als.pdf and which you are encouraged to read.

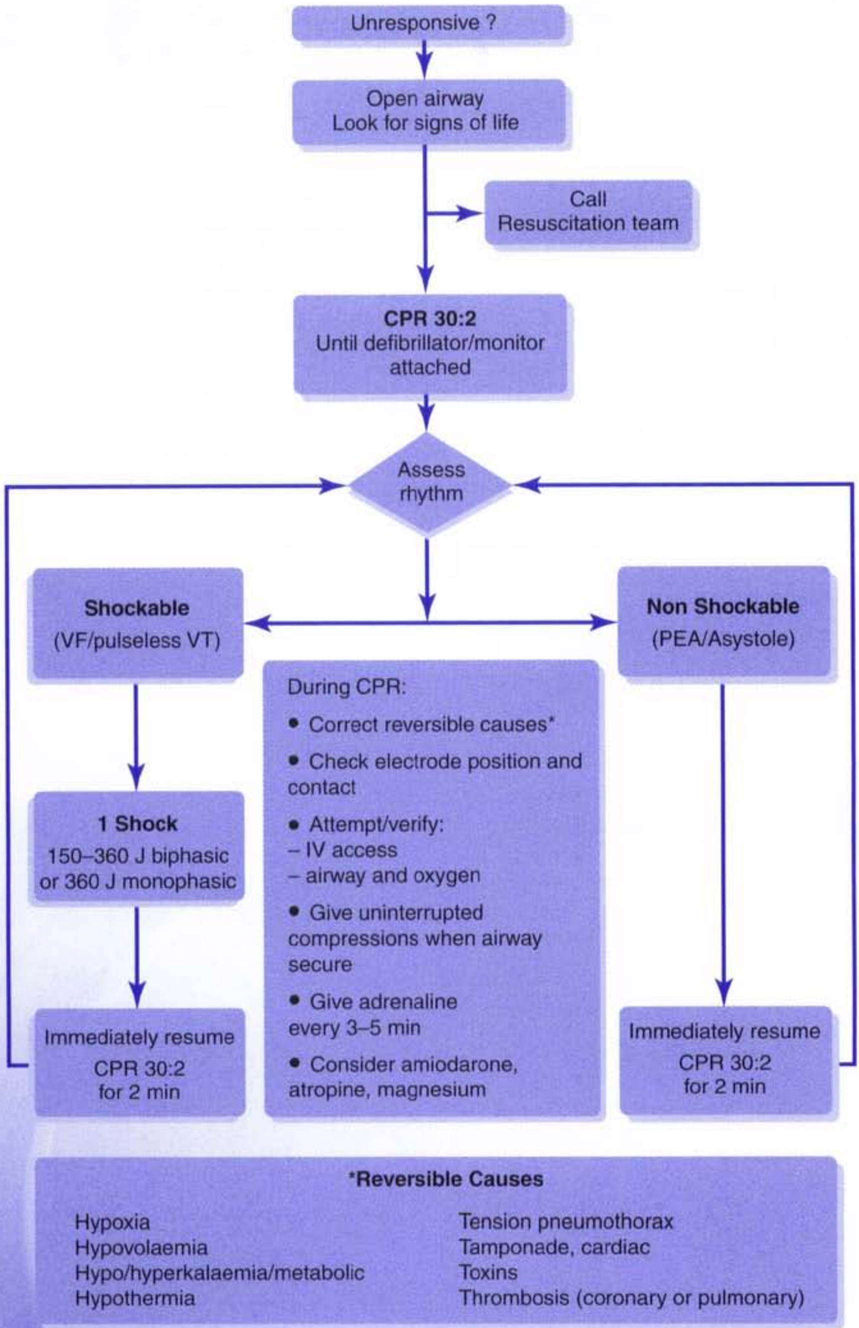


Figure 55. Advanced Life Support algorithm

Station 96
The primary and secondary surveys

In this station, you are going to be asked to assess a patient with a medical emergency or who has suffered severe injury (e.g. from a road traffic accident). What follows is a general outline of the areas that you are going to need to cover.

Primary survey

The quick look

- Inspect the patient.
- Introduce yourself to him. Is he responsive? Try to elicit a response by shouting out his name.

Airway and cervical spine

- Assess the airway for obstruction.
- If necessary, clear and secure the airway. If there is suspicion of a cervical spine injury, use the jaw-thrust technique.
- If there is a suspicion of cervical spine injury, immobilise the cervical spine in a stiff collar. Place sandbags on either side of the head and tape them across the forehead.

Breathing

- Assess breathing: look, listen, feel.
- Expose the chest.
- Note the rate and depth of respiration.
- Look for asymmetries of chest expansion.
- Look for chest injuries.
- Palpate for tracheal deviation. Palpate, percuss, and auscultate the chest. Try to exclude flail segments, pneumothorax, or haemothorax.
- Attach a pulse oximeter.
- If appropriate, ventilate using a bag, mask, and oropharyngeal airway or endotracheal tube.

Circulation and haemorrhage control

- Control any visible haemorrhage by direct pressure.
- Look for clinical signs of shock: assess the pulse, skin colour, capillary refill time, JVP, heart sounds, and blood pressure. Try to exclude cardiac tamponade.
- Attach an ECG monitor.

- Place two large-bore (grey) cannulas into large peripheral veins.
- Take a sample of blood for group and cross-match.
- Start fluid replacement.

Disability (neurological assessment)

- Assess neurological function on the AVPU scale:

  A Alert

  V Voice elicits a response

  P Pain elicits a response

  U Unresponsive

- Assess the pupils for size and reactivity.
- Check that all limb extremities can be moved.

Exposure and environmental control

- Remove the patient's remaining clothing and inspect both his front and back. Log-roll him so that his spine remains immobilised.
- Cover him in a blanket.

Secondary survey

Once the patient is stable:

- Take a short, AMPLE history:
  - **A**llergies.
  - **M**edications and tetanus immunity.
  - **P**revious medical history.
  - **L**ast meal.
  - **E**vents leading to the injury.
- Carry out a head-to-toe physical examination.
- Monitor ECG, BP, oxygen saturation, and core temperature.
- Insert a urinary catheter and, if necessary, a naso-gastric tube.
- Order investigations: full blood count, urea and electrolytes, liver function tests, amylase, glucose, coagulation profile, arterial blood gases, toxicology screen, and X-rays of the lateral cervical spine, chest, and pelvis.
- Encourage questions from the patient and address his concerns.

Station 97
Bag-valve mask ventilation

Specifications: A mannequin in lieu of a patient.

- Open the airway using the head-tilt, chin-lift method. Remove any visible obstruction from the mouth.
- Identify the need for a Guedel airway (e.g. if the airway is obstructed or the patient is unconscious.
- Size the Guedel airway by measuring the distance from the incisors to the angle of the jaw. The most commonly used sizes are 2 for a small adult, 3 for a medium adult, and 4 for a large adult.
- Insert the Guedel airway so that its concave side faces away from the tongue. After inserting it almost to the back of the pharynx, rotate it 180 degrees and slide it in to its full extent.
- Choose an appropriately sized bag-valve mask.
- Attach the bag-valve mask to an oxygen supply. Adjust the flow rate to 15 l per minute.
- Hold the mask over the face with your dominant hand. Place your thumb over the nose and support the jaw with the middle and ring fingers (Figure 57). Ensuring a tight seal is difficult, so make sure you have practiced.
- Maintain the head-tilt, chin-lift position.
- Use your free hand to compress the bag.
- Look for a rise in the chest.

! If a second person is available (e.g. the examiner), use both hands to hold the mask and get him to squeeze the bag.

- Ventilate at a rate of 10 compressions per minute until the patient starts breathing or until the patient can be intubated and put on a ventilator.

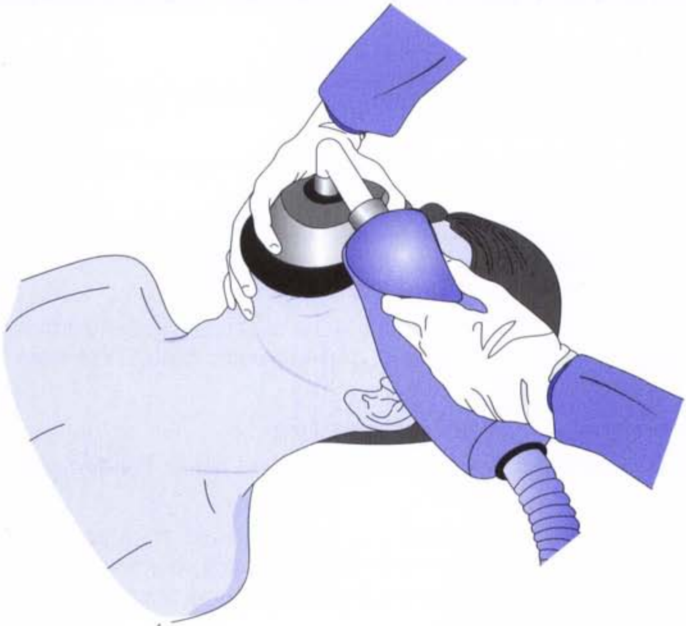


Figure 56. Bag-valve mask ventilation technique

Station 98
Laryngeal mask insertion

Specifications: A mannequin in lieu of a patient.

Table 68. Laryngeal mask sizes	
Size 1	Infant
Size 2	Child
Size 3	Small adult
Size 4	Normal adult
Size 5	Large adult

The equipment

Gather in a tray:

- A pair of non-sterile gloves.
- Laryngeal mask of appropriate size (see Table 68).
- Lubricant.
- An air-filled syringe.
- A bandage.

Before inserting the laryngeal mask

Don the gloves.

Assemble the equipment.

Check inflation and deflation of the laryngeal mask.

Lubricate the laryngeal mask.

Ensure that the patient has received adequate anaesthesia (the cough reflex should be suppressed).

Ensure that the patient has been pre-oxygenated, or pre-oxygenate him by bag ventilation for 1 minute.

Use the head-tilt, chin-lift technique to ensure that the mouth is fully open.

Check the state of the dentition.

Inserting the laryngeal mask

- Insert the tip of the mask into the mouth, ensuring that the aperture is facing the tongue.
- Press the tip of the mask against the hard palate as you introduce it into the pharynx.
- Use your index finger to guide the tube into the pharynx until resistance can be felt.
- Check that the black line on the tube is facing the upper lip.

! If you do not succeed in inserting the laryngeal mask within 30 seconds, you must pre-oxygenate the patient a second time before you try again.

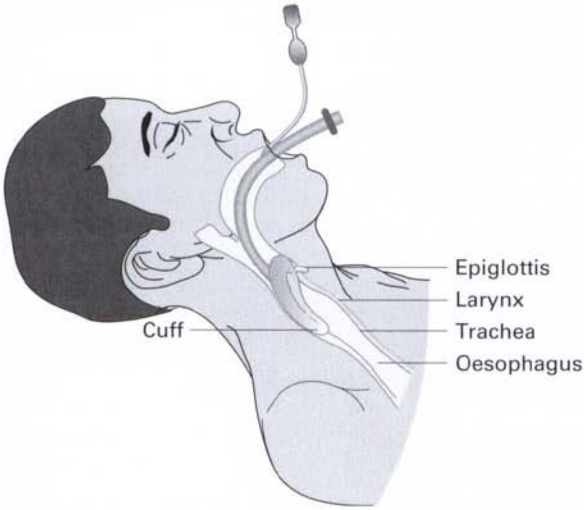


Figure 57. Laryngeal mask insertion

After inserting the laryngeal mask

Inflate the cuff, ensuring that you do not over-inflate it. A size 3 mask needs <20 ml of air, a size 4 <30 ml, and a size 5 <40 ml.

Secure the cuff in place by means of a length of bandage.

Attach the breathing system and check that the patient is being satisfactorily ventilated.

Station 99
Oxygen prescription

Table 69. Guide to oxygen masks

Type of mask	Oxygen concentration	Indications
Low flow masks Deliver a variable concentration of oxygen		
Nasal cannula	24–44% depending on the flow rate*	Patients with mild hypoxia who are otherwise stable; long-term domiciliary treatment
Simple face mask	Up to 60% at 6–10 l/min	Acutely breathless patients
Partial rebreather mask	60–80% at 10 l/min	As above
Non-rebreather mask	Up to 95% at 15 l/min	As above
High flow (Venturi) masks Deliver a fixed concentration of oxygen	24–60% in steps depending on the valve used (see Table 70)	"Carbon dioxide retainers" in whom oxygen control is a requirement**

* For every litre of flow delivered up to 6 litres, the oxygen concentration increases by about 4%, e.g. at 4 l/min, oxygen concentration is 36%.

**Note that the commonest cause of a high $PaCO_2$ is not carbon dioxide retention but ventilatory failure, in which the patient requires a high concentration of oxygen.

Table 70. Venturi mask valves

Valve colour	Flow rate (l/min)	Oxygen delivered (%)
Blue	2	24
White	4	28
Yellow	6	35
Red	8	40
Green	12	60

Before starting

Introduce yourself to the patient.

Explain the need for oxygen and ensure that the patient consents to being treated.

Quickly observe the equipment around you. There should be a selection of oxygen masks and Venturi valves.

The procedure

- Determine the patient's oxygen saturation using a pulse oximeter, and comment upon it.
- Tell the examiner that you would like to take an arterial blood gas sample. At this point, the examiner is likely to provide you with an arterial blood gas reading.
- Interpret the arterial blood gas reading (see Station 9).
- Select the appropriate piece of equipment and assemble it by connecting one end of the tubing to the piece of equipment and the other end to the oxygen source.
- Adjust the oxygen flow rate as appropriate.
- Apply the equipment to the patient, ensuring a tight yet comfortable fit.
- Tell the examiner that you would like to take a second arterial blood gas sample after a certain period of time. If the examiner provides you with a second arterial blood gas reading, interpret it and make the appropriate changes (if any).

After the procedure

Record the instructions and sign the prescription chart.

Ask the patient if he has any questions or concerns.

Thank the patient.

Station 100
Wound suturing

Specifications: A pad of "skin" in lieu of a patient. This station most likely requires you to talk through the parts of the procedure and then to demonstrate your suturing technique. For this second part, there can be no substitute for practice, practice, and practice!

Before starting

Introduce yourself to the patient.
Explain the procedure and ask for his consent to carry it out.
Examine the wound, looking for debris, dirt, and tendon damage.
Indicate that you would request an X-ray to exclude a foreign body.
Assess distal motor, sensory, and vascular function.
Position the patient appropriately and ensure that he is comfortable.

The equipment

Gather in a tray or on a trolley:

- A pair of non-sterile gloves.
- A suture pack.
- A suture of appropriate type and size (natural/synthetic, absorbable/non-absorbable).
- A 5 ml syringe, 21G and 25G needles, and a vial of local anaesthetic (e.g. 1% lignocaine).
- Antiseptic solution
- A sharps bin.

The procedure

- Wash your hands.
- Open the suture pack, thus creating a sterile field.
- Pour antiseptic solution into the receptacle.
- Open the suture, the syringe, and both needles onto the sterile field.
- Wash your hands using sterile technique.
- Don the non-sterile gloves.
- Attach a 21G needle to the syringe.
- Ask an assistant (the examiner) to open the vial of local anaesthetic and draw up 5 ml of local anaesthetic.
- Discard the needle into the sharps bin and attach the 25G needle to the syringe.

- Clean the wound (use forceps) with antiseptic-soaked cotton wool and drape the field. Dirty wounds may benefit from cleansing with povidone iodine, whereas normal saline can be used to cleanse and irrigate "clean" wounds.
- Inject the local anaesthetic into the apices and edges of the wound. Make sure to pull back on the plunger before injecting.
- Discard the needle into the sharps bin.
- Indicate that you would give the anaesthetic 5–10 minutes to operate (or as long as it takes).
- Apply the sutures approximately 3 mm from the wound edge and 5–10 mm apart. Use toothed forceps to hold the needle and forceps to pick up the skin margins. Knot the sutures around the toothed forceps.

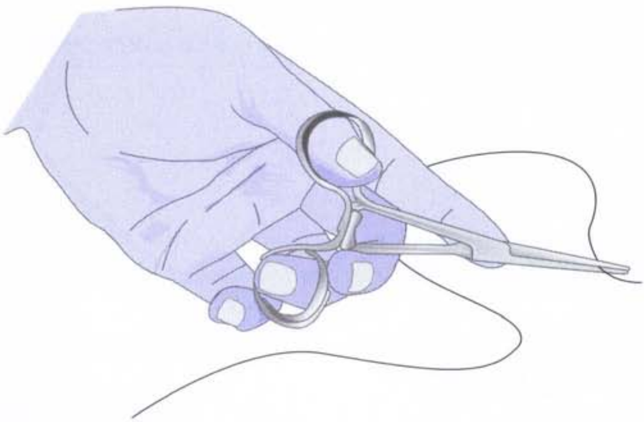


Figure 58. Use toothed forceps to hold the needle approximately two-thirds from the needle tip

After the procedure

Clean the wound and indicate that you would apply a dressing.

Assess the need for a tetanus injection.

Give appropriate instructions for wound care and indicate the date sutures should be removed (face 3–4 days, scalp 5 days, trunk 7 days, arm or leg 7–10 days, foot 10–14 days).

Ask if the patient has any questions or concerns.

Thank the patient.

Station 101
Syringe driver operation

There are two different sorts of syringe driver: the 50 ml syringe pump, frequently used for heparin, glyceryl trinitrate, and insulin infusions, and for epidural and patient-controlled analgesia pumps; and the Graseby syringe driver, which installs a 10 ml or 20 ml syringe and is frequently used in palliative care. There are two varieties of the Graseby syringe driver: the blue Graseby MS 16A, which is designed to be programmed at an hourly rate, and the green Graseby MS 26, which is designed to be programmed at a 12, 24, or 48 hourly rate. In this station, you may be required to set up and operate a Graseby syringe driver for two drugs, e.g. diamorphine and cyclizine.



Figure 59. The Graseby MS 16A, designed to be programmed at an hourly rate. Reproduced with permission by Smiths Medical International

Before starting

Introduce yourself to the patient.

Explain the need for a syringe driver and the procedure involved, and gain consent.

Gather the appropriate equipment.

The equipment

- Non-sterile gloves.
- Graseby syringe driver (check the battery is in place and the device is functioning).
- Luer-lock syringe (10 ml or 20 ml).
- Subcutaneous giving set.
- Drug.
- Diluent (sterile water or normal saline).

The procedure

- Consult the prescription chart and check:
  - The identity of the patient.

  - The prescription: drug(s), dose(s), diluent, route of administration, duration of the infusion, date and time of starting.
  - Drug allergies.
- Check the name, dose, and expiry date of the drug(s) on the vial(s).
- Ask a colleague (registered nurse or doctor) to confirm the name, dose, and expiry date of the drug(s) on the vial(s).
- Don a pair of non-sterile gloves.
- Draw up the correct doses of the drugs into the Luer-lock syringe.
- Draw up the correct diluent to make up the requested volume (stated on the prescription chart) and shake the syringe with the needle capped.
- Connect the giving set to the syringe and run the infusion through it.
- Calculate the rate of infusion by measuring the length of liquid in the syringe in millimetres and dividing it by the number of hours (Graseby 16A) or days (Graseby MS 26) over which the infusion should be given.
- Label the syringe with:
  - The patient's name, date of birth, and hospital number.
  - The date and time of preparation.
  - Drugs used and their doses.
  - Diluent used and its volume.
  - Rate of infusion.
  - Your name.
- Place the syringe into the syringe driver and secure the device.
- Set the syringe driver to the rate required.
- Place the giving set subcutaneously and start the infusion.

After the procedure

Sign the drug chart, and have your checking colleague countersign it.

Ask the patient if he has any questions or concerns.

Ensure that he is comfortable.

Station 102
Pre-operative assessment

The surgical pre-assessment is about half the job of a surgical house officer, so is not unlikely to be examined in a final year OSCE. The aims of the pre-operative assessment are primarily to:

- Ascertain that the patient is fit for surgery and anaesthesia.
- Take appropriate action if he is not.
- Ensure that he fully understands the proposed procedure.
- Ensure that he fully understands the peri-operative process and any special requirements of the proposed procedure.
- Minimise any remaining fears or anxieties.

Note: The responsibility for gaining informed consent from the patient is no longer that of the junior house officer, but that of the operating surgeon.

Specifications: In this station you may be asked to talk through or carry out a part or parts of the pre-operative assessment.

Before starting

Introduce yourself to the patient.

Explain that you are going to ask him some questions and carry out a physical examination to assess his fitness for surgery.

Ensure that he is comfortable.

The assessment

History

- Medical history, in particular:
    - Previous surgery and anaesthesia. Ask specifically about history of anaesthetic complications, e.g. suxamethonium apnoea, malignant hyperpyrexia.
    - Previous hospital admissions.
    - Cardiovascular: hypertension, palpitations, angina, myocardial infarction, cardiac failure, orthopnoea, other "heart problems", stroke or TIA.
    - Respiratory: dyspnoea, asthma, cough, tuberculosis.
    - GI and renal: dysphagia, heartburn, liver disease, renal failure.
    - Other: diabetes, sickle cell anaemia, epilepsy, neuromuscular problems.
- Drug history:
    - Prescribed medication – ask specifically about recent changes in medication, insulin, and anticoagulants.
    - Over-the-counter and alternative medication.
    - Recreational drugs.

- Allergies including to antiseptic, plaster, and latex.
- Smoking.
- Alcohol.

Note: Most drugs should be taken as normal on the day of the surgery, although special advice is needed for insulin and anticoagulants.

- Family history of allergic reactions, anaesthetic complications, medical and surgical conditions.
- Social history, e.g. level of support in post-operative period.

Physical examination

- Record height and weight and calculate his body mass index as given by weight in kilograms/(height in metres)^2, e.g. 70 kg/(1.8 m)^2 = 21.6 (normal 20–25).
- Examine the cardiovascular, respiratory, gastrointestinal, and neurological systems.
- Assess neck mobility by asking the patient to flex and extend his neck.
- Assess jaw mobility by asking the patient to open and close his mouth.
- Inspect the state of the dentition.
- Carry out a Mallampati pharyngeal assessment. To do this you need to ask the patient to open his mouth as wide as possible and to extend his tongue (Figure 62).

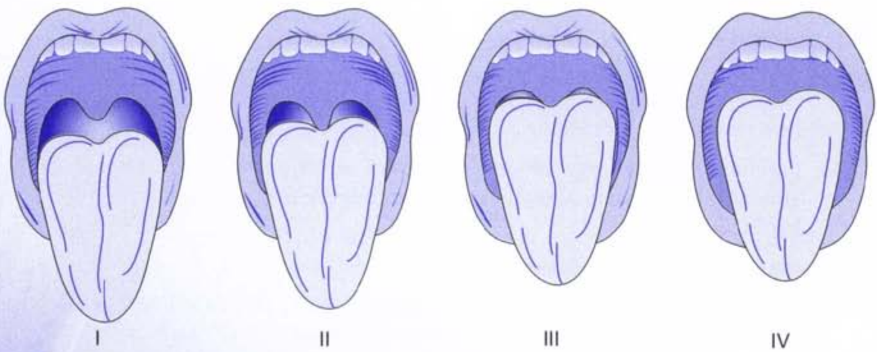


Figure 60. Mallampati pharyngeal assessment:
I – Pharyngeal pillars, soft palate, and uvula visible;
II – Soft palpate and uvula visible;
III – Soft palpate and the base of the uvula visible;
IV – Soft palate not visible
NB: Mallampati scores of III or IV are relative contraindications to surgery

- Determine the ASA physical status rating, a health index at the time of surgery (Table 71).

Table 71. The ASA physical status rating	
1*	Healthy, no systemic disturbance
2*	Mild/moderate systemic disease. No activity limitation.
3*	Severe systemic disturbance. Some activity limitation.
4*	Life-threatening systemic disturbance. Severe activity limitation.
5*	Moribund with limited chance of survival.

* Add suffix *E* for emergency.

Pre-operative investigations

Table 72. Indications for pre-operative investigations	
Group and save/ cross-match	Group and save for e.g. cholecystectomy, ERCP, mastectomy, amputation. Cross-match for e.g. laparotomy (2 units), TURP (3 units), hip replacement (4 units), liver surgery (6 units), aneurysm repair (4 units if elective, 10 units if emergency)
FBC	Cardiorespiratory disease, anaemia, blood loss, chronic disease, blood disorders, on an oral anticoagulant, alcohol misuse, female patients, male patients > 40 years
Clotting screen	Liver disease, alcohol misuse, on an anticoagulant
Sickle cell screening	Patients from Africa, the Caribbean, and the Mediterranean
U&Es	Hypertension, heart failure, renal failure, liver disease, diabetes, dehydration, starvation, on diuretics, digoxin, steroids, or lithium, age > 60 and having major surgery
Glucose	Diabetes, obesity, on steroids
LFTs (including clotting screen)	Liver disease, alcohol misuse, malignancy, malnutrition
ECG	Arrhythmias, angina, myocardial infarction, heart murmurs, heart failure, cardiovascular risk factors, age > 50
CXR	Hypertension, cardiorespiratory disease or symptoms, malignancy, > 60 years old and having major surgery, recent immigrant
Cervical spine X-ray	Severe chronic rheumatoid arthritis, cervical spondylosis
Other	TFTs in thyroid disease, amylase in abdominal pain or hepatobiliary surgery, lung function tests in severe respiratory disease, HIV test, drug levels e.g. if on digoxin or lithium

Peri-operative management

Explain about:

- Fasting, in most cases:
  - Stop solids from 6 hours before the operation.
  - Stop milky drinks from 4 hours.
  - Stop clear fluids (and chewing gum) from 2 hours.
- Pre-medication:
  - Benzodiazepines can be given before the operation to help the patient feel sleepy or less anxious.
- The anaesthetic procedure:
  - Patient information about different anaesthetic procedures can be obtained from http://www.kingsch.nhs.uk/patient/leaflets/pdf/clinical/SC013.pdf.
- Post-operative pain relief:
  - Oral analgesia, e.g. paracetamol, cocodamol, NSAIDs such as diclofenac and ibuprofen, tramadol, opiates.
  - Parenteral analgesia.
  - Suppositories.
  - Local anaesthetics and regional blocks.
  - Patient-controlled analgesia.
  - Patches.
- Post-operative nausea and vomiting:
  - Explain to the patient that he may feel sick after the operation and reassure him that this is quite normal and that he can be given an anti-sickness tablet or injection.
- Going home and driving.

After the procedure

Ask the patient if he has any remaining questions or concerns.

Thank the patient.

Order the appropriate investigations (Table 72) and remember to check up on the results!

Talk to the anaesthetist if you have any concerns.

Administrative skills

Station 103
Drug and controlled drug prescription

Before prescribing a drug

- Look at the patients medical notes. In particular, is there any hepatic or renal impairment/failure?
- Find out if he is on any other drugs, and consider possible interactions.
- Ask him if he has any allergies and document these in the medical notes.
- Explain to the patient the reason for recommending the drug, its likely beneficial effects, and its common or dangerous side-effects.

Prescribing a drug

- Write legibly and in black ink.
- Avoid all abbreviations other than those that are in common usage (see Table 73).
- Use generic names (unless a particular drug preparation is required).

Table 73. Latin abbreviations commonly used in prescribing drugs

Abbreviation	Latin	English
o.d.	*omni die*	once a day
b.d.	*bis in die*	twice a day
t.d.s.	*ter die sumendus*	three times a day
q.d.s.	*quarter die sumendus*	four times a day
q.q.h.	*quarta quaque horae*	every four hours
a.c.	*ante cibum*	before food
p.c.	*post cibum*	after food
o.m.	*omni mane*	every morning
o.n.	*omni nocte*	every night
p.r.n.	*pro re nata*	as required
Stat.	*statim*	at once

Include:

- The date.
- The full name, address, and date of birth of the patient.
- The age of the patient if he is a child under the age of 12.
- The generic name and formulation of the drug.
- The dose and frequency. Use the most appropriate units, e.g. 500 mg and not 0.5 g.

- The minimum dose interval (for PRN or "as required" drugs only).
- The quantity to be supplied.
- The signature of a registered medical practitioner. Any alterations or mistakes should also be signed (or at least initialled).

! If you are unsure about a drug, look it up in the British National Formulary or equivalent, and/or talk to a senior colleague.

Prescribing a controlled drug

In your own handwriting, include:

- The date.
- The full name, address, and date of birth of the patient.
- The generic name of the drug.
- The formulation and strength of the preparation.
- The required dose of the drug, frequency, and number of days it is to be taken.
- The total amount of the preparation, or the total number of dose units in both words *and* figures.
- Your signature and address.

December 12, 2005.

Mr. John Adam Smith
42 West Register Street
London XXXX XXX

Date of birth: 01/09/1972

SPECIMEN

Methadone 10mg tablets
10mg TDS for 7 days
210mg, two hundred and ten milligrams in total.

Signed: Dr. Peter Brown
The Best Hospital
London XXXX XXX

Figure 61. A controlled drug prescription

After prescribing a drug

If you haven't done so already, give the patient instructions for administration of the drug.

Ask the patient if he has any questions or concerns.

Station 104
Death confirmation

Golden lads and girls all must,
As chimney-sweepers, come to dust.

Cymbeline: Act II, Scene 2.

Shakespeare

Specifications: A mannequin in lieu of a cadaver (!)

- Take a history from a nurse (or indicate that you would do so).
- Ask for the patient's notes.
- Confirm the patient's identity: check his name tag.
- Observe the patient's general appearance and note the absence of respiratory movements.
- Ascertain that the patient does not rouse to verbal or tactile stimuli, such as pressure on a nail-bed.
- Confirm that the pupils are fixed and dilated.
- Use an ophthalmoscope to examine the fundi for segmentation of the retinal columns (railroading or palisading).
- Feel for the carotid pulses *on both sides*.
- Feel for the radial pulses.
- Feel for the femoral pulses.
- Auscultate over the precordium. Indicate that you would listen for one minute. Note whether the patient has a pacemaker or not (you can always look at a recent chest X-ray if you are not sure).
- Auscultate over the lungs. Indicate that you would listen for 3 minutes.
- Wash your hands.

! If any of your findings are non-corroboratory, you must consider the need for resuscitation.

- Make an entry in the patient's notes. Remember to include the time and date of death, and your examination findings.
- Indicate that you would:
  - Consider the need for a post-mortem (see *Station 105: Death certificate completion*).
  - Complete a death certificate (see Station 105).
  - Inform the patient's GP and next of kin of the patient's death.

Station 105
Death certificate completion

Legally, you can only fill in the death certificate if you have seen the patient in his last 14 days. Once the certificate is completed, it should be taken to the Registrar of Births and Deaths, usually by the patient's next of kin.

Before starting

You should understand the patient's history and the circumstances surrounding his death. You should have seen the patient's cadaver to confirm his death (or had the cadaver seen by a medically qualified colleague), noted if he had a pacemaker or radioactive implant, phoned his GP, and considered the need for a post-mortem examination (see Table 74).

Filling in the death certificate

In black ink, and as clearly and precisely as possible:

- Fill in the patient's:
  - Name.
  - Date of death.
  - Age.
  - Place of death.
- Fill in the date on which you last saw the patient alive.
- Circle one of the following statements:
  1. The certified cause of death takes account of information obtained from post-mortem.
  2. Information from post-mortem may be available later.
  3. Post-mortem not being held.
  4. I have reported this death to the Coroner for further action.
- Circle one of the following statements:
  a) Seen after death by me.
  b) Seen after death by another medical practitioner but not by me.
  c) Not seen after death by a medical practitioner.
- Fill in the cause of death: the disease that led directly to the patient's death is entered in Section I (a). The diseases that led to the disease entered in Section I (a) are entered in Sections I (b) and I (c).
- Fill in other significant diseases contributing to the death but not related to the disease having caused it in Section II.
- Tick the box if the death is related to employment.

- Sign the death certificate, fill in the date of issue, and print your name and medical qualification(s).
- Fill in the name of the consultant responsible for the overall care of the patient.
- Fill in the Counterfoil: record the patient's details and circumstances of death.
- Fill in the Note to Informant, and give it to the next of kin.

Table 74. Some reasons for referral to the coroner
The cause of death is uncertain.
The cause of death is due to industrial disease.
The cause of death is suspicious.
The cause of death is accidental.
The cause of death is violent.
The death is related to surgery or anaesthia.
A doctor has not attended in the 14 days prior to the patient's death.

OPCS
OFFICE OF POPULATION CENSUSES & SURVEYS

Medical Statistics Division

St Catherine's House
10 Kingsway
London WC2B 6JP

Telephone: 071-242 0262
Extension:
GTN: 3042

Fax: 071-404 1186

May 1990

Dear Doctor,

COMPLETION OF MEDICAL CERTIFICATES OF CAUSE OF DEATH

As you are aware the medical certificates of cause of death which you complete, for transmission to the Registrar of Births and Deaths serve both legal and statistical purposes. Our general experience in the handling of death certificates shows that most certifying doctors are punctilious and precise in completing them. However, we have identified certain aspects of certificate completion where ambiguities in our advice may have contributed to our receiving a number of less than satisfactory certificates. We thus wish to draw the attention of doctors to these aspects, which cover the recording of **modes of dying**, the recording of **diseases which might have been due to previous employment**, and the use of **abbreviations.** In this letter reference is made from time to time to the existing notes (which are provided with blank medical certificates of cause of death).

MODES OF DYING

Under current regulations Registrars of Births and Deaths are required to report to the Coroner any death the cause of which appears to be unknown, and a death where the Medical Certificate of Cause of Death shows **only** the mode of dying is usually deemed to fall within this requirement.

Present guidance to certifiers (on page iii of the notes) regarding the nature and status of conditions which may be considered as modes of dying states:-

> ".... there is no need to record the mode of dying (such as heart failure or asphyxia). Addition of a statement of the mode of dying does not assist in deriving mortality statistics, where the underlying cause of death is explicitly stated (eg Cardiac Arrest following Myocardial Infarct.). Even more important is the need to avoid completing a certificate with the mode of dying as the only entry; this should be the subject of further enquiry if the disease process involved is genuinely not known."

The guidance to advisable practice summarised as **"..avoid completing a certificate with the mode of dying as the only entry,"** is generally taken in the context of the statistical, rather than the legal consequences of non-adherence; you are reminded that, for the reasons given above, non-compliance may well result in the referral of the case to the Coroner.

Statements which imply a mode of dying rather than a cause of death

I would like you to know that a more comprehensive list of 'unacceptable' statements has been constructed, and is reproduced here for your information:

Asphyxia	Asthenia
Brain failure	Cachexia
Cardiac arrest	Cardiac failure (not further qualified)
Coma	Debility (General)
Exhaustion	Heart failure (not further qualified)
Hepatic failure	Hepatorenal failure
Kidney failure	Liver failure
Liver and kidney failure	Renal failure
Respiratory arrest	Shock
Syncope	Uraemia
Vagal inhibition	Vasovagal attack

The primary purpose of the provision of this detailed list is to assist you in completion of Medical Certificates of Cause of Death. However, this list is also being supplied to all Registrars of Births and Deaths, with instructions that when any of these statements is **used alone on a Medical Certificate** it should be interpreted by them as a mode of dying rather than as a definitive cause of death, and normally referred to the Coroner. It should be further noted that, except where specified, the simple qualification of the terms in this list by such words as 'acute' or 'chronic' **is not sufficient to make them acceptable.**

Whenever certifiers have insufficient knowledge regarding the cause of death over and above an awareness of the mode of dying, it is, of course, a requirement for such deaths to be reported to Coroners. However this course of action should not normally be necessary in a situation in which the certifying doctor has knowledge of a relevant natural underlying cause, but merely fails to record it. I would thus like to remind you of your statutory responsibilities regarding the provision of a cause of death (as specified on page i of the notes), and which require you in all cases to state it 'to the best of your knowledge and belief'.

DEATHS THAT MIGHT BE DUE TO PREVIOUS EMPLOYMENT

I should further like to remind you of your obligations, (detailed on page ii of the notes) regarding the completion of medical certificates, and the reporting to Coroners of deaths which might be due to or contributed by the employment followed at some time by the deceased. Some diseases, such as tuberculosis, which in some circumstances may be employment-related are often known not to be so in the case of a particular deceased person. In these instances qualification on the death certificate by a form of words such as 'non-industrial' can preclude subsequent enquiries by the Registrar of Births and Deaths.

ABBREVIATIONS

All doctors will be aware of the misunderstandings that can arise by the recording of even the most commonly used abbreviations. It is thus important that certifiers should refrain from this practice when completing certificates of cause of Death. Failure to do so may also generate further enquiries by Registrars of Births and Deaths.

NEED FOR ACTION

If it is necessary for Registrars of Births and Deaths to take further action, or to make further enqiries, this can can cause anxieties to relatives of deceased persons, and delay arrangements that they may have made. Thus I would be grateful for your co-operation in noting the matters identified in this letter and taking such action as is required.

I have arranged for this letter to be distributed to General Practitioners through Family Practitioner Committees; and to Hospital Consultants through Regional Medical Officers. In due course it is also expected that the printed instructions incorporated in the blank books of certificates will be updated, but in the meantime Registrars of Births and Deaths will also include a copy of this letter when a futher supply of certificates is ordered.

It would be very helpful if you could assist us further by bringing it to the attention of any of your colleagues who would not have received it directly through these channels.

Yours sincerely

Dr J S A Ashley MB FFCM
Deputy Chief Medical Statistician

COUNTERFOIL

For use of Medical Practitioner, who should complete in all cases.

Name of deceased ____________________

Date of death ____________________

Age ____________________

Place of death ____________________

Last seen alive by me ____________________

Post-mortem/* Coroner 1 2 3 4

Whether seen after death* a b c

Cause of death:—

I (a) ____________________

(b) ____________________

(c) ____________________

II ____________________

Employment? ☐ *Please tick where applicable*

B. Further information offered?

____

Signature ____________________

Date ____________________

**Ring appropriate digit(s) and letter*

BIRTHS AND DEATHS REGISTRATION ACT 1953

(Form prescribed by the Registration of Births and Deaths Regulations 1987)

Registrar to enter No. of Death Entry

MEDICAL CERTIFICATE OF CAUSE OF DEATH

For use only by a Registered Medical Practitioner WHO HAS BEEN IN ATTENDANCE during the deceased's last illness, and to be delivered by him forthwith to the Registrar of Births and Deaths.

Name of deceased ....

Date of death as stated to me .... day of .... Age as stated to me ....

Place of death ....

Last seen alive by me .... day of ....

1 The certified cause of death takes account of information obtained from post-mortem.
2 Information from post-mortem may be available later.
3 Post-mortem not being held.
4 I have reported this death to the Coroner for further action. *[See overleaf]*

Please ring appropriate digit(s) and letter

a Seen after death by me.
b Seen after death by another medical practitioner but not by me.
c Not seen after death by a medical practitioner.

CAUSE OF DEATH

The condition thought to be the 'Underlying Cause of Death' should appear in the lowest completed line of Part I.

	These particulars not to be entered in death register Approximate interval between onset and death
I (a) Disease or condition directly leading to death† ____	
(b) Other disease or condition, if any, leading to I(a) ____	
(c) Other disease or condition, if any, leading to I(b) ____	
II Other significant conditions CONTRIBUTING TO THE DEATH but not related to the disease or condition causing it. ____	

SAMPLE

The death might have been due to or contributed to by the employment followed at some time by the deceased. ☐ Please tick where applicable

†This does not mean the mode of dying, such as heart failure, asphyxia, asthenia, etc: it means the disease, injury, or complication which caused death.

I hereby certify that I was in medical attendance during the above named deceased's last illness, and that the particulars and cause of death above written are true to the best of my knowledge and belief.

Signature ____________________ Qualifications as registered by General Medical Council ____________________

Residence ____________________ Date ____________________

For deaths in hospital: Please give the name of the consultant responsible for the above-named as a patient ____________________

(Form prescribed by the Registration of Births and Deaths Regulations 1987)

NOTICE TO INFORMANT

I hereby give notice that I have this day signed a medical certificate of cause of death of

____

____

Signature ____________________

Date ____________________

This notice is to be delivered by the informant to the registrar of births and deaths for the sub-district in which the death occurred.

The certifying medical practitioner must give this notice to the person who is qualified and liable to act as informant for the registration of death (see list overleaf). Where the informant intends giving information for the registration outside of the area where the death occurred, this notice may be handed to the informant's agent.

DUTIES OF INFORMANT

Failure to deliver this notice to the registrar renders the informant liable to prosecution. The death cannot be registered until the medical certificate has reached the registrar.

When the death is registered the informant must be prepared to give to the registrar the following particulars relating to the deceased:

1. The date and place of death.
2. The full name and surname (and the maiden surname if the deceased was a woman who had married).
3. The date and place of birth.
4. The occupation (and if the deceased was a married woman or a widow the name and occupation of her husband).
5. The usual address.
6. Whether the deceased was in receipt of a pension or allowance from public funds.
7. If the deceased was married, the date of birth of the surviving widow or widower.

THE DECEASED'S MEDICAL CARD SHOULD BE DELIVERED TO THE REGISTRAR

PERSONS QUALIFIED AND LIABLE TO ACT AS INFORMANTS

The following persons are designated by the Births and Deaths Registration Act 1953 as qualified to give information concerning a death; in order of preference they are:

DEATHS IN HOUSES AND PUBLIC INSTITUTIONS

(1) A relative of the deceased, present at the death.

(2) A relative of the deceased, in attendance during the last illness.

(3) A relative of the deceased, residing or being in the sub-district where the death occurred.

(4) A person present at the death.

(5) The occupier* if he knew of the happening of the death.

(6) Any inmate if he knew of the happening of the death.

(7) The person causing the disposal of the body.

DEATHS NOT IN HOUSES OR DEAD BODIES FOUND

(1) Any relative of the deceased having knowledge of any of the particulars required to be registered.

(2) Any person present at the death.

(3) Any person who found the body.

(4) Any person in charge of the body.

(5) The person causing the disposal of the body.

*"Occupier" in relation to a public institution includes the governor, keeper, master, matron, superintendent, or other chief resident officer.

Complete where applicable

A	B
I have reported this death to the Coroner for further action.	I may be in a position later to give, on application by the Registrar General, additional information as to the cause of death for the purpose of more precise statistical classification.
Initials of certifying medical practitioner. ______	Initials of certifying medical practitioner. ______

The death should be referred to the coroner if:

- the cause of death is unknown
- the deceased was not seen by the certifying doctor *either* after death *or* within the 14 days before death
- the death was violent or unnatural or was suspicious
- the death may be due to an accident (whenever it occurred)
- the death may be due to self-neglect or neglect by others
- the death may be due to an industrial disease or related to the deceased's employment
- the death may be due to an abortion
- the death occurred during an operation or before recovery from the effects of an anaesthetic
- the death may be a suicide
- the death occurred during or shortly after detention in police or prison custody

LIST OF SOME OF THE CATEGORIES OF DEATH WHICH MAY BE OF INDUSTRIAL ORIGIN

MALIGNANT DISEASES	Causes include
(a) Skin	– radiation and sunlight – pitch or tar – mineral oils
(b) Nasal	– wood or leather work – nickel
(c) Lung	– asbestos – chromates – nickel – radiation
(d) Pleura and peritoneum	– asbestos
(e) Urinary tract	– benzidine – dyestuff manufacture – rubber manufacture
(f) Liver	– PVC manufacture
(g) Bone	– radiation
(h) Lymphatics and haematopoietic	– radiation – benzene
POISONING	
(a) Metals	e.g. arsenic, cadmium, lead
(b) Chemicals	e.g. chlorine, benzene
(c) Solvents	e.g. trichlorethylene

INFECTIOUS DISEASES	Causes include
(a) Anthrax	– imported bone, bonemeal hide or fur
(b) Brucellosis	– farming or veterinary
(c) Tuberculosis	– contact at work
(d) Leptospirosis	– farming, sewer or under-ground workers
(e) Tetanus	– farming or gardening
(f) Rabies	– animal handling
(g) Viral hepatitis	– contact at work
CHRONIC LUNG DISEASES	
(a) Occupational asthma	– sensitising agent at work
(b) Allergic alveolitis	– farming
(c) Pneumoconiosis	– mining and quarrying – potteries – asbestos
(d) Chronic bronchitis and emphysema	– underground coal mining

NOTE:—The Practitioner, on signing the certificate, should complete, sign and date the Notice to the Informant, which should be detached and handed to the informant. Where the informant intends giving information for the registration outside of the area where the death occurred, the notice may be handed to the informant's agent. The Practitioner should then, without delay, deliver the certificate itself to the Registrar of Births and Deaths for the sub-district in which the death occurred. Envelopes for enclosing the certificates are supplied by the Registrar.

FIGURE 62. COPY OF DEATH CERTIFICATE

Communication skills

Station 106
Explaining skills

These skills can be used to explain a common condition, to explain an investigation, or to explain a procedure or treatment. They can also be used in your private life, although it may then be unwise to draw a diagram or hand out a leaflet.

What to do

- Introduce yourself.
- Summarise the patient's presenting symptoms.
- Tell the patient what you are going to explain.
- Determine how much the patient already knows.
- Determine how much the patient would like to know.
- Elicit the patient's main concerns.
- Deliver the information.
  - For a medical disorder: aetiology, epidemiology, clinical features, investigations/treatment, prognosis.
  - For a pharmacological treatment: name, mechanism of action, procedure involved (dose, route of administration, frequency, precautions), principal benefits, principal side-effects, principal contraindications, alternatives including no treatment.
  - For an investigative procedure: purpose, description of the procedure, principal risks, alternatives including no investigation, preparation required, after the procedure, results.
  - For a surgical procedure: purpose, description of the procedure, principal risks, alternatives including no surgery, preparation required, anaesthetic procedure, post-operative care (e.g. recovery room, oxygen, blood pressure monitoring, etc.), analgesia.
- Summarise and check understanding.
- Encourage and address questions.

How to do it

- Be empathic.
- Explore the patient's feelings.
- Give the most important information first.
- Be specific.
- Regularly check understanding.
- Pitch the explanation at the patient's level. Use simple language and short sentences. If using a medical or technical term, explain it in layman's terms.

- Use diagrams, if appropriate.
- Hand out a leaflet.
- Be honest. If you are unsure about something, say you will find out later and get back to the patient.

What not to do

- Hurry.
- Reassure too soon.
- Be patronising.
- Give too much information.
- Use medical jargon.
- Confabulate (make things up).

'Really, now you ask me,' said Alice, very much confused, 'I don't think –'
'Then you shouldn't talk,' said the Hatter.

Alice's Adventures in Wonderland: A Mad Tea-Party

Lewis Carroll

Some of the medical disorders, pharmacological treatments, investigative procedures, and surgical procedures that you may be asked to explain in an OSCE are listed below.
Information can be obtained from websites such as: http://www.patient.co.uk, http://www.besttreatments.co.uk, www.kingsch.nhs.uk/patients/leaflets/

Medical disorders

- Asthma.
- Diabetes.
- Hypertension.
- Angina.
- Dementia.
- Miscarriage.
- Osetoarthritis/rheumatoid arthritis.

Pharmacological treatments

- Statins.
- Antibiotics.
- Asthma inhalers.

- Corticosteroids.
- Insulin.
- Antihypertensives.
- Antidepressants.
- Analgesics.
- Glyceryl trinitrate.
- Contraceptive pill (emergency pill, combined pill, progestogen-only preparations).
- Pessaries and suppositories.
- Skin preparations, e.g. emollient, steroid cream, sunscreen.

Investigative procedures

- Chest or abdominal X-ray.
- CT scan.
- MRI scan.
- Ultrasound scan.
- Echocardiography.
- Flexible bronchoscopy.
- Ventilation/perfusion scan.
- Spirometry.
- Oesophagogastroduodenoscopy (OGD).
- Barium swallow/meal/follow-through.
- Barium enema.
- Flexible sigmoidoscopy.
- Colonoscopy.
- Cystoscopy.

Surgical procedures

- Angioplasty.
- Laparoscopic cholecystectomy.
- Endoscopic retrograde cholangiopancreatography (ERCP).
- Inguinal hernia repair.
- Transurethral resection of the prostate (TURP).
- Hip/knee replacement.
- Varicose vein stripping.

Station 107
Obtaining consent

Common questions

The purpose of gaining consent

Consent is needed on every occasion a doctor wishes to initiate an investigation or treatment or any other intervention, except in emergencies or where the law dictates otherwise (such as where compulsory treatment is authorised under the Mental Health Act).

How long is consent valid for?

Consent should be seen as a continuing process rather than a one-off decision. When there has been a significant period of time between the patient agreeing to a procedure and its start, consent should be reaffirmed.

Refusal of treatment

Competent adult patients are entitled to refuse treatment even when doing so may result in permanent physical injury or death. For example, a competent Jehovah's Witness can refuse a blood transfusion even if he will surely die as a result. An adult patient is competent if he can:

- Understand what the intervention is.
- Understand why the intervention is being proposed.
- Understand the alternatives to the intervention, including no intervention.
- Understand the principal benefits and risks of the intervention and of its alternatives.
- Understand the consequences of the intervention and of its alternatives.
- Retain the information for long enough to weigh it in the balance and reach a reasoned decision, whatever that decision may be. In some cases, the patient may not have the cognitive ability or emotional maturity to reach a reasoned decision, or may be unduly affected by mental illness.

Obtaining consent

! **When seeking to obtain consent, it is important not to be seen to be rattling through a list of "must dos", but trying to elicit the patient's ideas, concerns, and expectations, and tailoring your explanations accordingly.**

- The type of information that should be provided to obtain consent includes:
  - What the intervention is (use diagrams if this is helpful).
  - Why the intervention is being proposed.
  - Alternatives to the intervention, including no intervention.
  - The principal benefits and risks of the intervention and of its alternatives.

  - The consequences of the intervention and of its alternatives.
- Ask the patient to summarise the above information, and be certain that he is competent to give consent. If you are unsure, consider asking for a psychiatric opinion.
- Remind the patient that he does not have to make an immediate decision and that he can change his decision at any time.

Station 108
Breaking bad news

What to do

- Introduce yourself.
- Look to comfort and privacy.
- Determine what the patient already knows.
- Determine what the patient would like to know.
- Warn the patient that bad news is coming.
- Break the bad news.
- Identify the patient's main concerns.
- Summarise and check understanding.
- Offer realistic hope.
- Arrange follow-up.
- Try to ensure there is someone with the patient when he leaves.

How to do it

- Be sensitive.
- Be empathic.
- Maintain eye contact.
- Give information in small chunks.
- Repeat and clarify.
- Regularly check understanding.
- Give the patient time to respond. Do not be afraid of silence or of tears.
- Explore the patient's emotions.
- Use physical contact if this feels natural to you.
- Be honest. If you are unsure about something, say you will find out later and get back to the patient.

What not do to

- Hurry.
- Give all the information in one go, or give too much information.
- Use euphemisms or medical jargon.
- Lie or be economical with the truth.
- Be blunt. Words are like loaded pistols, as Jean-Paul Sartre once said.
- Prognosticate (*she's got six months, maybe seven*).

Station 109
The angry patient or relative

I was angry with my friend:
I told my wrath, my wrath did end.
I was angry with my foe:
I told it not, my wrath did grow.

William Blake

The "angry person" station can be rather unnerving, if only because medical students – and especially medical students in the earlier years of their training – are relatively sheltered from such persons.

The aim of the game is to diffuse the person's anger, *not* to rationalise it or to placate it. You should therefore try to be as empathic and non-confrontational as possible.

What to do

- Introduce yourself.
- Acknowledge the person's anger.
- Try to find out the reason for his anger, e.g. frustration, fear, guilt.
- Validate his feelings.
- Let him vent his anger, or any feelings that led to his anger, e.g. frustration, fear, guilt.
- Offer to do something or for him to do something.

How to do it

- Sit at the same level as the same person, not too close but not too far either.
- Make eye contact.
- Speak calmly and do not raise your voice.
- Avoid dismissive or threatening body language.
- Encourage the person to speak. Ask open rather than closed questions, and use verbal and non-verbal cues to show that you are listening.
- Empathise as much as you can.
- Be aware of your own safety.

What not to do

- Glare at the person.
- Confront him.
- Interrupt him.
- Patronise him.

- Get too close to or touch him.
- Block his exit route.
- Put the blame on others/seek to exonerate yourself.
- Make unreasonable promises.
- If the person is a patient's relative, be mindful of potential confidentiality issues.

Station 110
The anxious or upset patient or relative

What to do

- Look to comfort and privacy.
- Introduce yourself and try to establish rapport.
- Acknowledge the person's emotional state, e.g. *You seem to be very upset.*
- Explore his feelings, e.g. *What's making you so upset?*
- Validate his feelings, e.g. *I think that most people would feel that way in your situation.*
- Provide honest and accurate information about the situation.
- Offer to do something or for him to do something.
- Summarise and conclude.

How to do it

- Encourage him to speak, e.g. by asking open rather than closed questions and by prompting him on, e.g. *Can you tell me more about that?*
- Show that you are listening, e.g. by making appropriate eye contact, adjusting your body posture, and using appropriate verbal and non-verbal cues.
- Be empathic.
- Use silence at appropriate times. If the person sheds tears, give him the time and space to do so and hand over a box of tissues.
- Use physical contact if this feels natural to you.
- Remain poised: speak calmly, use simple sentences, and pace the information that you give.
- Repeat and clarify the information that you give, and check understanding.
- Encourage questions.

What not to do

- Ask only closed questions.
- Interrupt or rush him.
- Do all the talking.
- Dismiss or trivialise his feelings.
- Reassure too soon.

- Offer inappropriate reassurance or false hope, e.g.
  - *There's absolutely nothing to be afraid of, everything will be just fine.*
  - *Sure she's dead, but you'll get over her much sooner than you think.*
  - *I'm sure your father's in a better place now.*
- If the person is a patient's relative, be mindful of potential confidentiality issues.

Station 111
Cross-cultural communication

You do not need to have a Masters in anthropology from the School of Oriental and African Studies to score highly in this station. All you need to do is use some basic communication strategies, as detailed here. It is also important that you are seen to respect the patient's beliefs and/or values.

- Introduce yourself to the patient, and ensure that he is comfortable.
- Ask the patient's name, age, and occupation.
- Determine the patient's reason for attending.
- Elicit the patient's:
  - **I**deas
  - **C**oncerns
  - **E**xpectations

    (**ICE**)
- Establish:
  - The patient's cultural or religious group.
  - The implications that this has on his reason for attending.
  - The patient's individual beliefs and values.
- Check that you have understood the patient's problems.
- Explore possible solutions, and agree a mutually satisfactory course of action.
- Summarise the consultation.
- Check the patient's understanding.
- Thank the patient.

Station 112
Discharge planning and negotiation

Setting the scene

- Introduce yourself to the patient.
- Summarise the situation to him.
- Explore the impact that the illness/hospitalisation has had on him.
- Explore his current mood and dispositions.

Going home and after

- Explain that you are considering for the patient to go home.
- Elicit and address any concerns that he may have about going home. Reassure him that transport can be organised, if need be.
- Explore his home situation and support system.
- Consider any extra help that can be offered to the patient, for example, social services, home help, *meals on wheels*, health visitor, district nurse, specialist nurses, palliative care team, dietician, occupational therapist, speech (language) therapist, physiotherapist, psychologist, continence advisor, self-help group, day centre.
- Discuss medication and compliance. Check that the patient doesn't have any concerns about taking his discharge medication and reassure him that the pharmacy can supply a Dossett box, if need be.
- Address risk factors. Suggest lifestyle changes that the patient may benefit from, such as stopping smoking, eating a balanced diet, taking regular exercise, etc.
- Offer the patient a follow-up appointment either at his GP surgery or in the Out-Patient's Department.

Before finishing

- Summarise what has been said.
- Check the patient's understanding of what has been said.
- Ask the patient if he has any further questions or concerns.
- Thank the patient.

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